



FOURTEENTH ANNUAL
CONVENTION OF THE
AMERICAN STREET
RAILWAY ASSOCIATION



MONTREAL
OCT. 15th TO 18th 1895



1895

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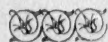




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Fourteenth · Annual · Convention

OF THE

 American 
Street  Railway
 Association 

HELD IN

Montreal

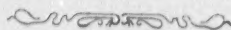
15th, 16th, 17th & 18th of October, 1895



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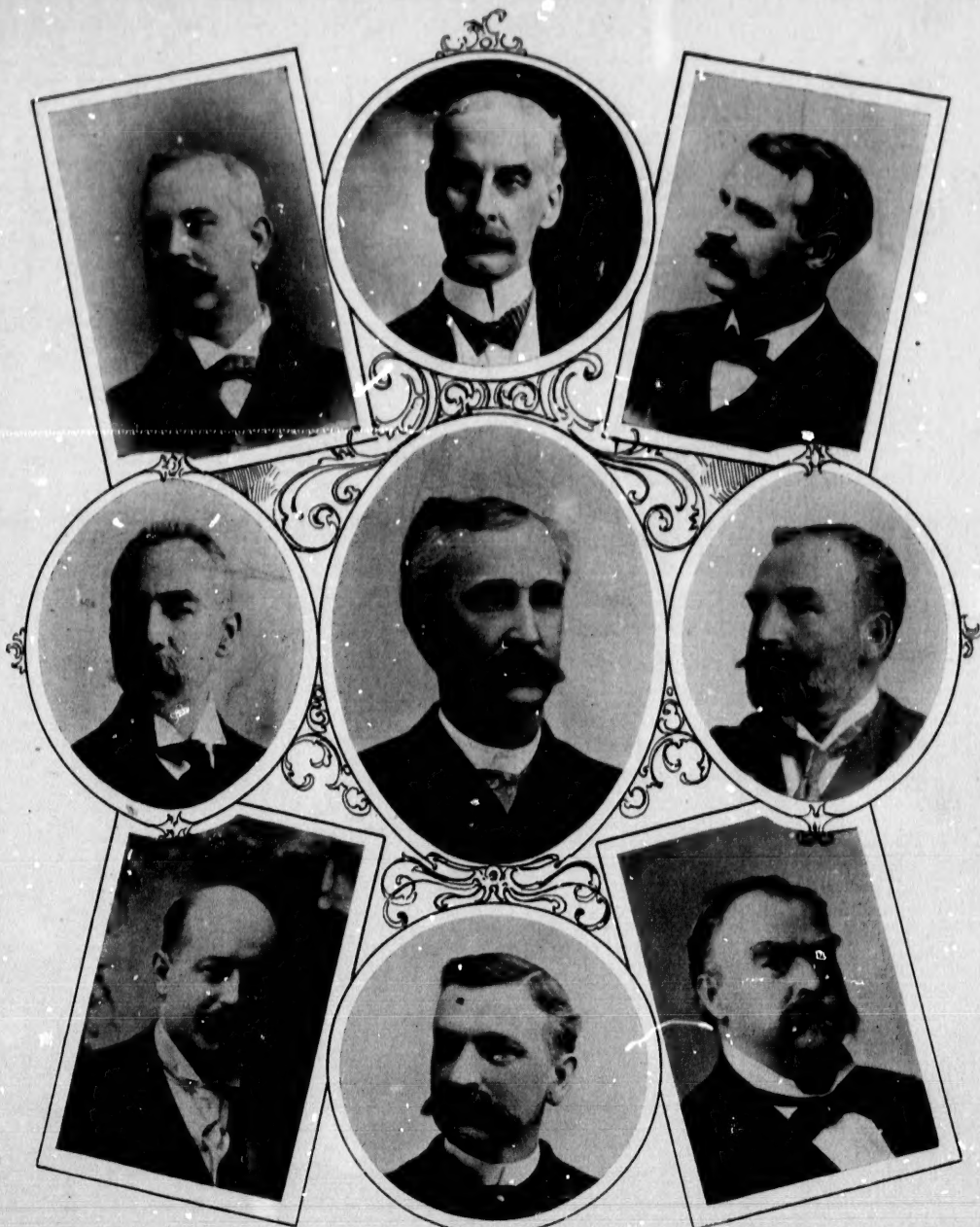
73 St. James Street, Montreal.

LOCAL COMMITTEE IN MONTREAL.



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PROF. CARUS-WILSON, McGill University.
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M. DAVIS.
L. J. FORGET, President Montreal Street Railway.
E. P. HANNAFORD, Chief Engineer Grand Trunk Railway.
LT.-COL. F. C. HENSHAW, Director Montreal Street Railway.
J. F. HILL, Comptroller Montreal Street Railway.
H. HOLGATE, Manager Montreal Park & Island Railway.
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E. LUSHER, Secretary and Treasurer Montreal Street Railway.
D. McDONALD, Superintendent Montreal Street Railway.
P. A. PETERSON, Chief Engineer Canadian Pacific Railway.
C. E. L. PORTEOUS, Toronto Railway.
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P. W. ST. GEORGE, City Engineer.

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G. C. CUNNINGHAM.
WM. H. JACKSON.

OFFICERS OF THE AMERICAN STREET RAILWAY ASSOCIATION.

In Memoriam.

He was a man.

And who knew him but to love and respect the thoughtful, considerate life, actuated by a genuine desire to help his fellow man. Possessed of a genial, sunny temperament, polished by education and striving after high ideals; his presence was ever conspicuous by its quiet dignity, and sterling worth of character, which impressed itself on all around.

From its inception chosen to fill those offices of the Association upon which most depended its success and progress, he ever gave to the work his best thought and effort; and modestly performed labors, and personally attended to the execution of details little realized, and hence inadequately appreciated by those he served.

Careful in matters of smallest consequence as in those of vital import, he ever worked conscientiously and unceasingly; refusing to leave to other hands the execution of many things one less exacting of himself would have done.

In personal life, a devout Christian; whose religion was a part of his daily life, commanding the admiration and respect of every man. In his home a thoughtful husband and loving father. In business, honorable and faithful to the interests he was called so long to serve.

And he is gone.

We miss his kindly face; his friendly greeting; the word of welcome and the hand-grasp which came from the heart. We shall miss him from his accustomed seat and in our councils, for he is gone.

But not forgotten.

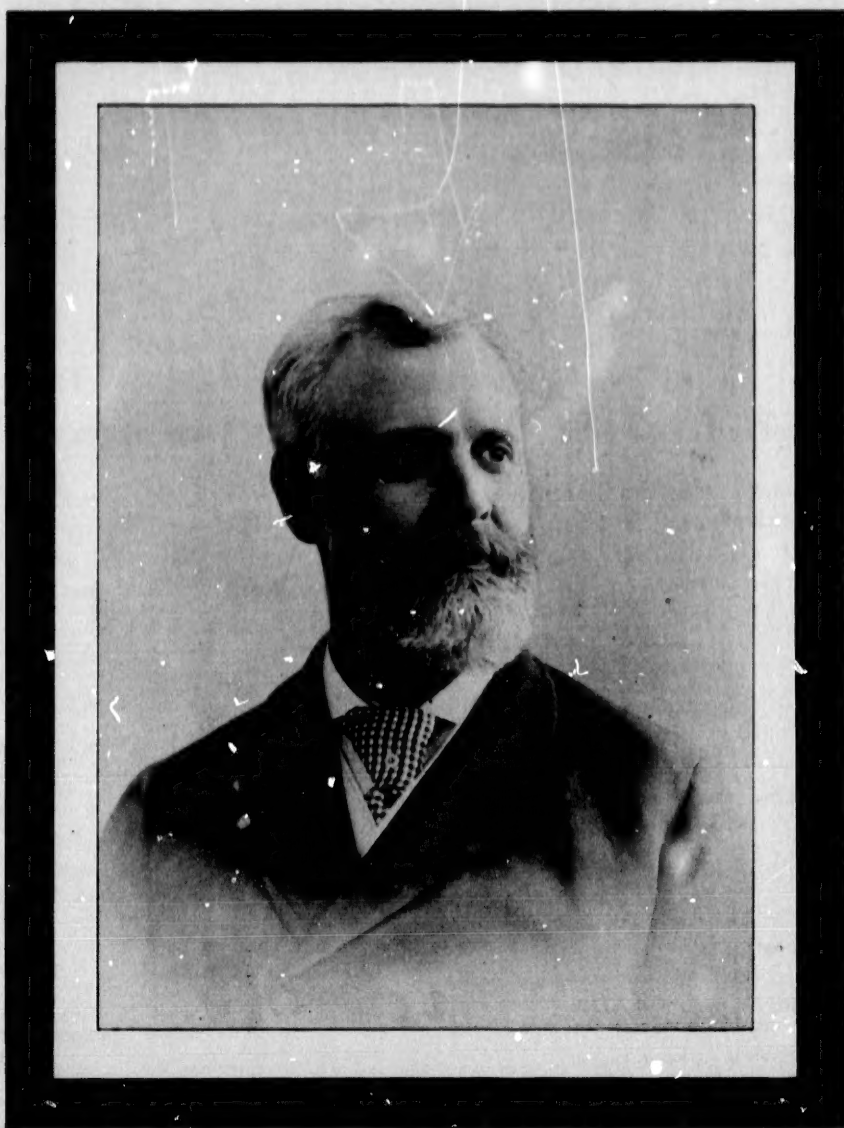
For in each heart there beats a sense of personal loss; of something not to be replaced; of a friendship rudely broken; of a sincere sympathy for her who was ever his constant companion at these annual convenings, and who so nobly shared his trials and successes.

His was a rarely blameless life; we cherish his example; we honor the stainless name he left and that name is—

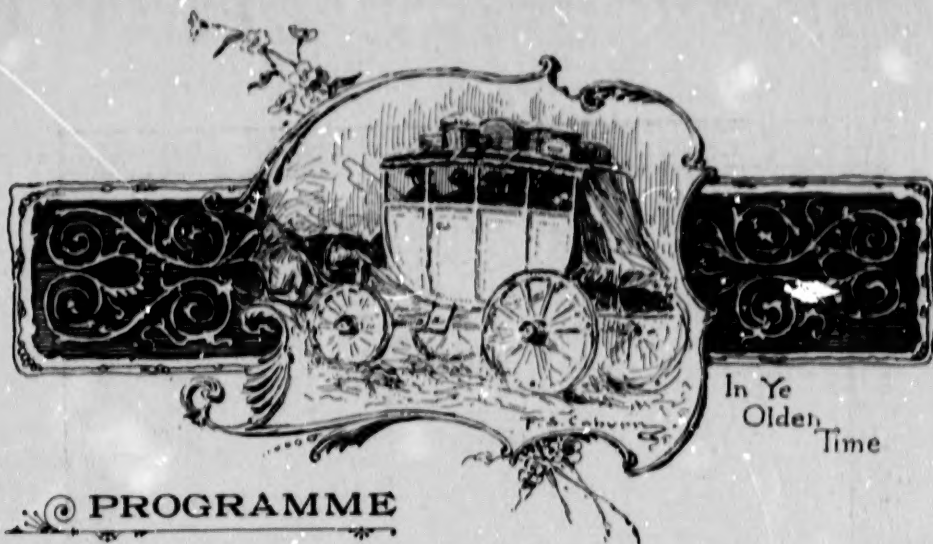
WILLIAM J. RICHARDSON.

Born, October 22, 1849.

Died, April 26, 1895.



THE LATE WM. J. RICHARDSON.



PROGRAMME

FOURTEENTH ANNUAL MEETING

OF THE

American Street Railway Association.

TUESDAY, OCTOBER 15.

10 a.m. Opening of Convention in Windsor Hall. Address of welcome delivered by His Worship Mayor Villeneuve, Mayor of Montreal.

1. Reading minutes of last meeting.
2. Address of President.
3. Report of Executive Committee.
Minutes of special meeting of Executive Committee.
4. Report of Treasurer.

Executive session for discussion of the subject of "Transfers" and other subjects relating to the practical operation of railroads.

Distribution of banquet tickets.

Papers will be read upon :

"Street Railway Feeder Systems," by Mr. E. P. Burch, Minneapolis, Minn., and upon

"Air Brakes," by Mr. E. J. Wessells, New York.

Exhibition of Street Railway Supplies, in Victoria Rink, adjoining Windsor Hall. Exhibition will be open all day and during evening till 10 p.m. during the Convention.

The electric lighting of the Exhibition has been furnished by the courtesy of the Royal Electric Company of Montreal.



WEDNESDAY, OCTOBER 16.

10 a.m. Executive session. Discussion of the "Labor Question," and other subjects relating to the practical operation of Railroads.

Papers will be read upon :

"Road Construction," by C. S. Sargeant, Boston, Mass., and upon
"Cross Ties and Poles for Street Railways," by N. W. L.

3 p.m. Reception by McGill University in the Engineering Building. Electrical machinery and testing apparatus will be shown in operation. All delegates and ladies are invited to attend. Tickets can be obtained at the information Bureau.

The College buildings will be open to visitors any afternoon during the week.

THURSDAY, OCTOBER 17.

10 a.m. Executive session. Discussion of "Municipal Ordinances," and subjects relating to the practical operation of railroads.

Announcement of Committee to nominate officers for ensuing year.

Papers will be read upon :

"Patents," by W. R. Greene, Chicago, Ill., and upon
"Freight, Express and Mail Service," by Benj. Norton, Newburgh, N.Y.

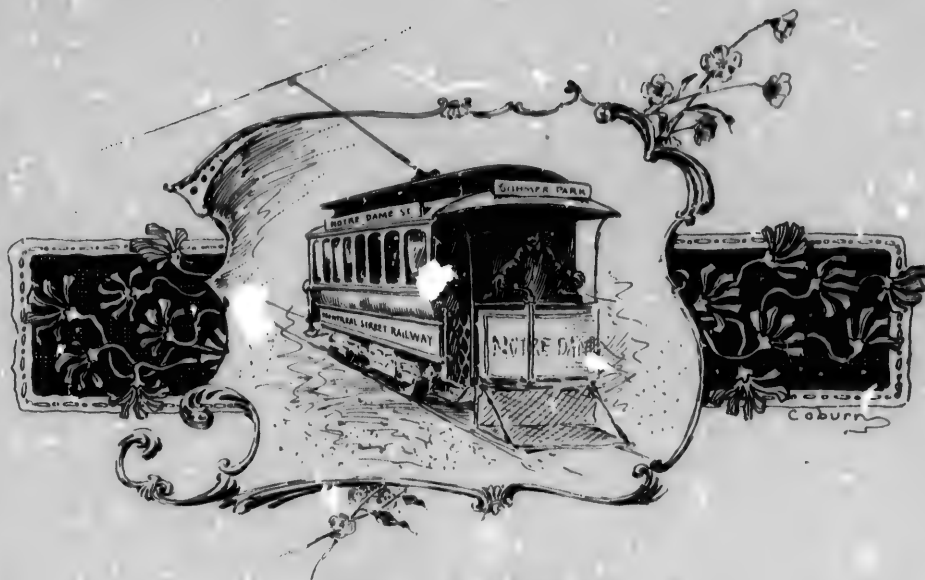
3.30 p.m. Special trip over the street railway system and visit to Fower House and Shops. Also a special trip over the

system of the Montreal Park & Island Railway Company and the Mount Royal Incline Railway Company. Special cars will start from the Windsor Hotel at 3.30 p.m.

NOTE.—During the Convention all those wearing Convention badges will be carried free on the cars upon showing badge.

7.30 p.m. The Annual Banquet of the American Street Railway Association will be held in the Windsor Hotel at 7.30 p.m.

Those intending to be present will please give their names and secure tickets **AT ONCE** at the Information Bureau in the Windsor Hotel.



FRIDAY, OCTOBER 18.

10 a.m. Executive session. Discussion of the subject of

"Experience of Roads in Furnishing Free Music and other Entertainments to the Public," and upon subjects relating to the practical operation of railroads.

Paper will be read upon the subject of

"Car Heating," by Mr. James F. McElroy, Albany, N. Y.

Election of officers.

Election of Secretary of the Association.

Selection of place of meeting for 1896 and closing ceremonies.

During the Convention, among the various things of interest to be seen, delegates and their friends should not omit to visit the Kermesse in the Drill Hall, Craig Street, held in aid of the Notre Dame Hospital, in progress throughout the Convention week.

SATURDAY, OCTOBER 19.

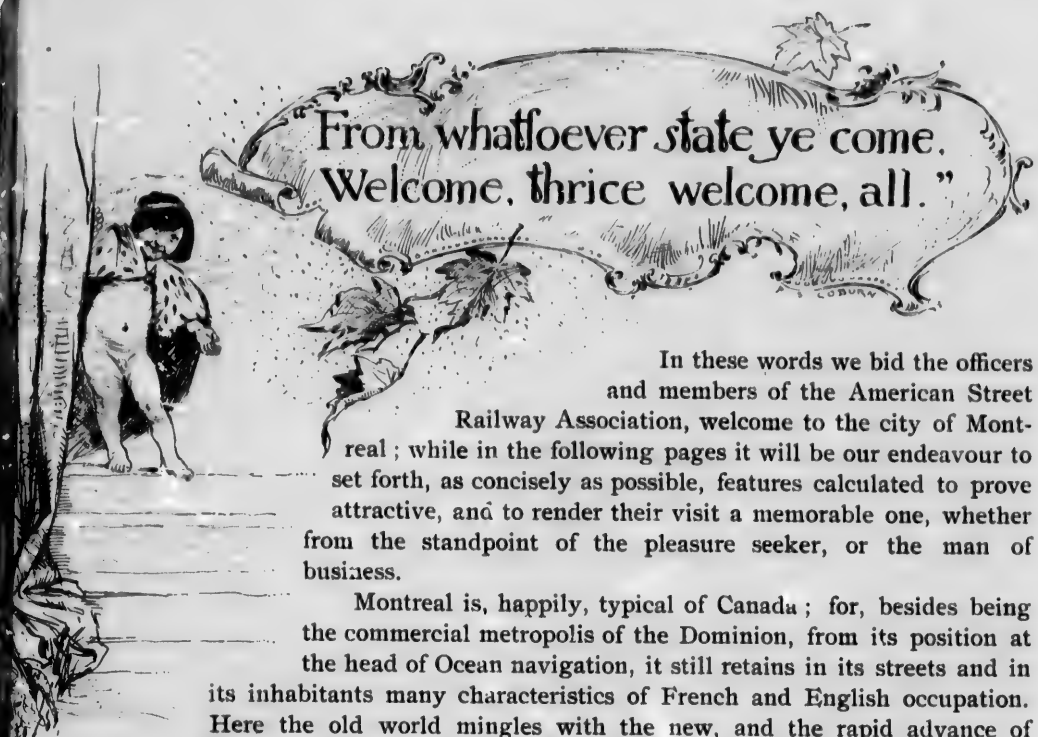
Trip to Ottawa, by special train on the Canadian Pacific Railway, tendered to the members of the Association by Mr. James Ross, Vice-President of the Montreal Street Railway Company.

The party will be taken over the Ottawa street railway system and received in the Senate Chamber of the Parliament Buildings. Luncheon will be served in the Russell House, given by the Montreal Street Railway Company, and the return to Mont-

real made in time to catch the outgoing evening trains to Boston and the west.

Special will leave Montreal at 7.30 a.m., arriving back at 7 p.m.

Members of the Association who can accept Mr. Ross' invitation will please give their names and those of the ladies accompanying them to the Information Bureau in the Windsor Hotel not later than noon on Thursday, so that cards may be given and arrangements completed.



From whatsoever state ye come.
Welcome, thrice welcome, all."

In these words we bid the officers and members of the American Street Railway Association, welcome to the city of Montreal ; while in the following pages it will be our endeavour to set forth, as concisely as possible, features calculated to prove attractive, and to render their visit a memorable one, whether from the standpoint of the pleasure seeker, or the man of business.

Montreal is, happily, typical of Canada ; for, besides being the commercial metropolis of the Dominion, from its position at the head of Ocean navigation, it still retains in its streets and in its inhabitants many characteristics of French and English occupation. Here the old world mingles with the new, and the rapid advance of civilization only serves to make the contrast more apparent.

The city was founded in 1642 by Paul de Chomedey, sieur de Maisonneuve, a knight of the mediæval school, upon a site now occupied by the Custom House. Two tablets, affixed to this building, read as follows : " This site was selected and named, in 1611, La Place Royale, by Samuel de Champlain, the founder of Canada," and " Near this spot, on the 18th day of May, 1642, landed the founders of Montreal, commanded by Paul de Chomedey, sieur de Maisonneuve ; their first proceeding being a religious service."

Accompanying Maisonneuve was a Jesuit, Father Vimont, who, as evening approached, sang the mass. An account of the ceremony is given in these words : " Tents were pitched, camp fires were lighted, evening fell, and mass was held. Fire flies caught and imprisoned in a phial upon the altar served as lights, and the little band were solemnly addressed by Vimont, in words which included these : " You are a grain of mustard seed that shall rise and grow till its branches overshadow the earth. You are few, but your work is the work of God. His smile is upon you and your children shall fill the land." The

obelisk, of which we give an illustration, marks the place where this service was held.

It may, however, prove interesting to take a brief glance at the condition of the country a little over a century previous to the foundation of the city.

In 1535, shortly after the discovery of Québec, Jacques Cartier sailed up the St. Lawrence, in search of the "mysterious kingdom of Hochelaga," of which he had received glowing accounts from the Indians of Stadacona. His ascent of the river was prosperous, and he speaks of the scenery on both



OLD SEMINARY GATE AND CLOCK.

sides, as "extremely rich, and beautifully varied," the country being well covered with fine timber and abundance of vines. On the second day of October, the exploring party, consisting of about fifty sailors and their officers, in a small galleon and two long boats, approached the "mysterious kingdom." Where now may be seen the gray and grim-looking buildings used as storehouses, hundreds of Indians flocked along a barren shore, singing and

dancing; eager to welcome the pale-faced strangers.

At dawn, on the following day, Jacques Cartier and his followers set forth to inspect the wondrous "town," under the guidance of three Hochelagans.

An Indian path led, through the forest, to the site of Montreai. What Jacques Cartier then saw is given in his own words: "And we, being on the road, found it as beaten as it was possible to see, in the most beautiful soil and the fairest plain: oaks as fair as there are any in forests of France, under which all the ground was covered with acorns And about a league thence, we commenced to find the lands tilled and fair large fields full of the corn of their lands, which is like Brazil rice, as large, or more, than peas; whereof they live as we do of wheat.

"And in the midst of these fields is situated and fixed the said town of Hochelaga, near and joining a mountain which is in the neighbourhood, well tilled and exceeding fertile: therefrom one sees very far. We named the



MONTREAL, LOOKING NORTH-WEST, FROM TOWERS OF NOTRE-DAME CHURCH.

mountain Mount Royal." After an inspection of the town, which appears to have been highly satisfactory, the explorers returned to their boats; and, as many of the sailors were weary, they were carried upon the shoulders of the Indians, for this was long before the advent of electric cars, and of transfer

tickets. The town of Hochelaga was in fact a fort, strongly palisaded with wood; on the inside a gallery was formed, reached by ladders; and here a plentiful supply of rocks and stones, for the defence of the town, were stored.

Jacques Cartier did not attempt a settlement at Montreal, and it was not until seventy years after, when Samuel de Champlain commenced his explorations, that the place was regarded as the principal place for establishing a new colony. When Champlain visited the site of the city, in 1611, as stated elsewhere, the Indian village of Hochelaga had disappeared, and its inhabitants had been either massacred or carried into captivity during a war



POST OFFICE.

which occurred after Jacques Cartier's voyage of discovery. "The history of the destruction of this village, as related to Champlain by his guide and held as a tradition among the remnant of the Hurons who escaped the catastrophe of the war of extermination waged against them by the Iroquois, has been preserved by Peter Dooyentate Clarke, the historian of the Hurons, and himself a descendant of the tribe. The author tells how Hurons and Senecas lived in peace and friendship, for many generations, at the town of Hochelaga. They intermarried, and had no cause for quarrel, till, for some reason, a Seneca chief refused his son permission to marry a Seneca maiden. Enraged at the action of the stern parent, the lady refused all offers of marriage, and declared that she would only wed the warrior who should slay the chief who had interfered with her happiness. A young Wyandote, smitten by her charms, attacked and killed the old

chief and received the coveted reward. The Senecas, however, adopted the cause of their chief, and a terrible fratricidal war spread desolation throughout the Huron country, nor did it cease until the Iroquois had completely broken up, and almost exterminated the Hurons. The story of the heroine has been compared to that of Helen, and the fate of Hochelaga, to the siege of Troy."

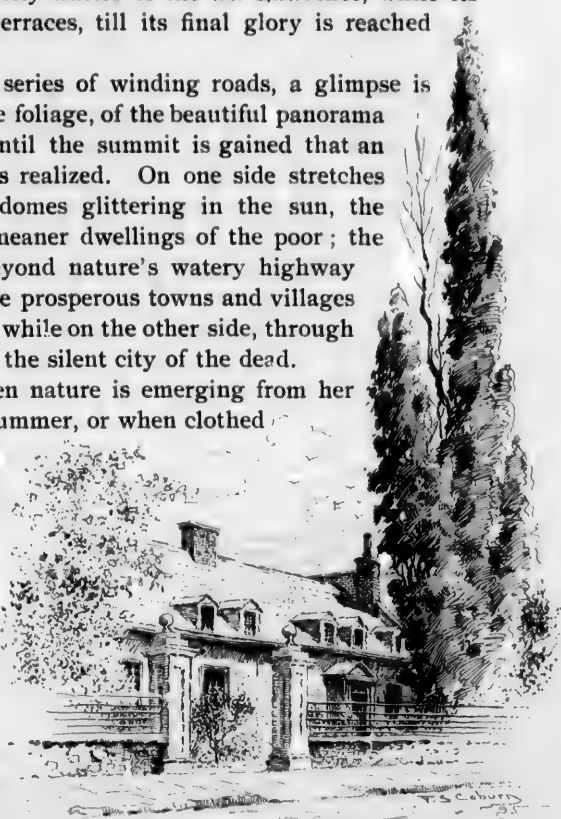
From these few indications of early history, and from the quaint view which is given of the town of Hochelaga in 1535, the visitor will be able to form an idea of the progress of civilization in three hundred and sixty years; and however deficient we may still be, one fact is apparent, that we have a better method of transportation than that of carrying weary tourists on our shoulders.

The magnificence of the situation of the city of Montreal is realized at a glance. Past its front sweep the stately waters of the St. Lawrence, while its buildings rise on a succession of terraces, till its final glory is reached in Mount Royal.

Ascending the mountain by a series of winding roads, a glimpse is obtained, here and there, through the foliage, of the beautiful panorama spread out below; but it is not until the summit is gained that an idea of the vastness of the scene is realized. On one side stretches out the city with its spires and domes glittering in the sun, the palatial homes of the wealthy, the meaner dwellings of the poor; the broad avenues and parks; and, beyond nature's watery highway lined with docks and shipping, the prosperous towns and villages which rise from its southern shore; while on the other side, through the shadow of the trees may be seen the silent city of the dead.

Whether in the springtime, when nature is emerging from her veil of snow; in the perfection of summer, or when clothed with the glory of autumnal tints, both the Mount, and the view which it affords, appeal forcibly to every lover of the beautiful.

It is a notable fact that, with the development of commerce, the city has approached nearer and nearer the foot of the mountain, and then extended both east and west. For fifty years after the foundation, the limits of the town were strictly confined within the fortified walls, on account of the frequent attacks



CHATEAU DE RAMESAY.

of the Indians, but as they were gradually subdued or civilized, suburbs soon sprung up outside these limits. In the year 1672, the population of Montreal was one thousand five hundred and twenty, and an idea of the progress made in fifty years may be gained from the fact that about this time the village of Laprairie, on the southern shore, was founded by a band of Christian Iroquois. A hundred years later, in the year 1770, we find the following description of the city: "Montreal is situated on the island of that name, the second place in Canada for extent, buildings and strength. The streets are regular, forming an oblong square, and the houses are well built. The city has six or seven gates, large and small, but its fortifications are mean and inconsiderable."

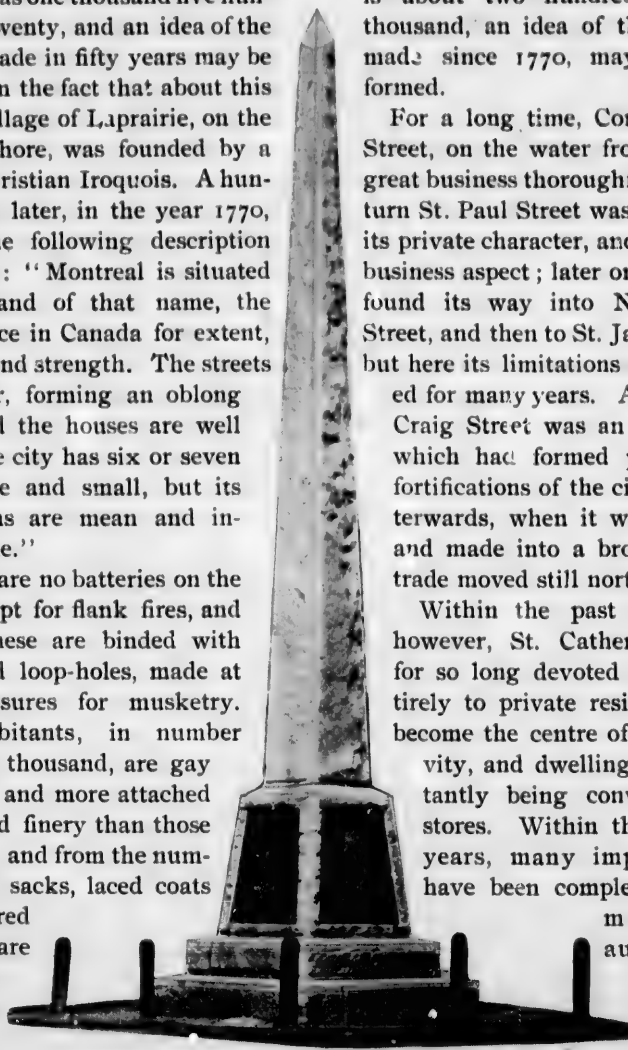
"There are no batteries on the walls, except for flank fires, and most of these are binded with planks and loop-holes, made at the embrasures for musketry. The inhabitants, in number about five thousand, are gay and lively, and more attached to dress and finery than those of Quebec; and from the number of silk sacks, laced coats and powdered heads that are constantly seen in the streets, a

stranger would imagine that Montreal was wholly inhabited by people of independent fortunes."

As the present population of the city is about two hundred and fifty thousand, an idea of the progress made since 1770, may be easily formed.

For a long time, Commissioners Street, on the water front, was the great business thoroughfare; then in turn St. Paul Street was divested of its private character, and assumed a business aspect; later on, commerce found its way into Notre Dame Street, and then to St. James Street, but here its limitations were marked for many years. At this time, Craig Street was an open ditch which had formed part of the fortifications of the city; but afterwards, when it was filled up and made into a broad avenue, trade moved still northward.

Within the past few years, however, St. Catherine Street, for so long devoted almost entirely to private residences, has become the centre of great activity, and dwellings are constantly being converted into stores. Within the past ten years, many improvements have been completed by the municipal authorities. Nearly the whole of the city has



OBELISK, ST. ANN'S MARKET.

been paved; and several of the leading thoroughfares have been widened. There has also been a noticeable increase of buildings erected by corporation and business firms. Among these may be mentioned the stations of the Grand

Trunk and the Canadian Pacific railways, both of which were comparatively insignificant buildings until within this period. On St. James Street in particular, several handsome structures have been completed, including the lofty building of the New York Life Insurance Company, at the corner of Place d'Armes; the Temple Building, on the site of St. James Methodist Church; and the Bank of Toronto, at the corner of McGill Street, wherein the consul for the



BANK OF MONTREAL.

United States has his offices; while the Imperial Building, the Mechanics' Institute, and the City and District Savings Bank buildings have undergone extensive alterations. On Notre Dame Street, the Sun Life Insurance Company's offices, and the Balmora Hotel have been added to the list of the large buildings, while on St. Catherine Street, the most important structures erected within this period are St. James Methodist Church, Morgan's dry goods store, Henry Birks & Sons' Building, and Murphy's Building. There are also many fine structures in course of erection, such as the offices of the Montreal Street Railway, on the corner of Craig Street and Place d'Armes Hill, the Canada Life Insurance Company's offices and Ogilvie's Building. A corresponding activity has been noticeable in the erection of private dwellings, and many stately homes which have been completed within the past few years, are proof of the prosperity of the city.





THE commercial importance of the city of Montreal gradually increased with the development of the free trade in the Far-West, from the fact of its being the headquarters of the North-West Company, an association of wealthy Scottish and French Canadian merchants who, by their activity and enterprise, did much to build up the commercial fabric of Canada. Its position thus established is undoubtedly a permanent one, for, backed by the great lake and canal systems which connect it with Chicago, Duluth and other cities, its influence reaches far into the interior; while the Canadian Pacific Railway, whose lines bring the commerce of China and India across the continent, has also its headquarters in Montreal. Many important improvements have also been made in the harbour of Montreal, which now admits of the largest ships reaching port from the Atlantic Ocean.

A structure particularly worthy of notice, in connection with the river, is Victoria Bridge, spanning the St. Lawrence just above the harbour, and connecting the Grand Trunk Railway with routes to the United States. The extreme length of this bridge is two miles, and, for a long time after its erection, it was regarded as an unequalled triumph of engineering skill. It is composed of one large span in the centre, of three hundred and thirty feet, and twenty-three spans of two hundred and forty-two feet each. The tubes are of iron, twenty-two feet in height and sixteen feet in breadth; supported by twenty-two stone piers measuring three million cubic feet. The cost of the bridge was seven million dollars.

A more modern structure, the Canadian Pacific Railway Bridge, spans

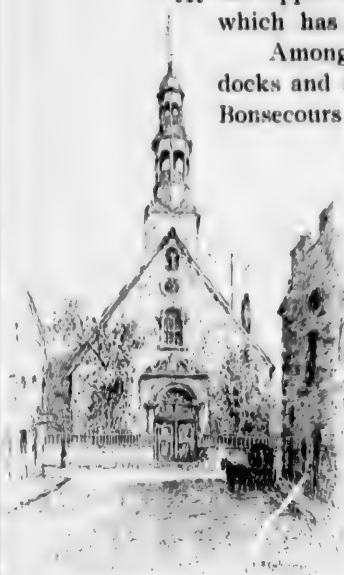


VICTORIA SQUARE.

the St. Lawrence at Lachine, and connects the Canadian Pacific Railway with Montreal.

At the upper end of the harbour is the entrance to the Lachine Canal, which has been improved of late at an enormous cost.

Among other places of interest along the water front, besides the docks and shipping, are the Custom House, Bonsecours Church and Bonsecours Market. The Church of Notre-Dame-de-Bonsecours, from which the adjoining market derived its name, is historically one of the most interesting buildings of the city. Its foundation dates back to 1657—fifteen years after the foundation of the city—when Maisonneuve donated a piece of land on which to build a chapel. The building first erected measured thirty by forty feet, but it was soon found to be too small, and in 1675 a larger church was commenced, which stood until 1754, when it was destroyed by fire. The present church was completed in 1771. There are several very old paintings in the church, to which great value is attached. There is also an image of the Virgin, which was "acquired by Sister Marie Bourgeoys, from a noble of Brittany, where it had been reputed for miracles. She, in consequence, brought it over, had the chapel built for it, and set it up where it now stands,



BONSECOURS CHURCH.

and where it has remained the patron of the French sailors for nearly two centuries and a half." Bonsecours Market is specially worthy of a visit on one of its market days. Here a graphic illustration of the provincial life of the French Canadian may be obtained. To the observer of human nature, the *habitant* and his methods of doing business will furnish an interesting study.

In the midst of the St. Lawrence, almost opposite the Market, is a favourite resort in summer, known as St. Helen's Island, named by Champlain after his wife. The island is laid out as a park, and being thickly wooded has many pleasant shaded walks. Within an enclosure containing a fort, is a space reserved for military purposes. The Island may be reached in a few minutes by means of the Richelieu & Ontario Navigation Company's boats. It may here be pointed out that very enjoyable short trips may be made



A FRENCH CANADIAN HABITANT.

by boat, which afford a beautiful view of the scenery of the St. Lawrence. We will soon leave this portion of the city and proceed to examine some of the most important of

MONTREAL'S PUBLIC BUILDINGS.

Amongst the most interesting of these is the Chateau de Ramezay—one of the oldest historical landmarks—associated with events of the greatest importance in Canadian history. It was built in 1705 by Claude de Ramezay, governor



CITY HALL.

of Montreal. Within its venerable walls, after the fall of Quebec, in 1760, arrangements were completed for the withdrawal of the last French garrison from Montreal, by which act the finest colony of France, and for which the French had done so much, became the possession of Britain.

In 1775 the Chateau was again made memorable as the headquarters of the American Brigadier-General Wooster,

and in the following year, under General Benedict Arnold, the Commissioners of Congress, Benjamin Franklin, Samuel Chase, and Charles Carroll, of Carrolton, here held council. To Benjamin Franklin Montreal was indebted for its first printer—Fleury Mesplet, who established the *Gazette*, which is still in existence, as one of the leading papers of the city.

For years after the British conquest the Chateau was recognized as the official residence of English governors while here. For a time a portion of the building was used as the Circuit Court of the district, but it is now converted into a museum, in which will repose many interesting souvenirs associated with the history of the Province.

A visit to the spacious vaults will give an idea of the stability of the structure, which could not be obtained from an exterior view.

To the west of the Chateau is situated the Court House, recently enlarged to meet the legal requirements of Montreal and the District. Affixed to this

building is a tablet bearing this inscription : " Here stood the church, chapel and residence of the Jesuit Fathers. Built 1692, occupied as military headquarters 1800. Burnt 1803. Charlevoix and Lafitau, among others, sojourned here. On the square, in front, four Iroquois suffered death by fire, in reprisal, by order of Frontenac, 1696.

This square was also, during the present century, the site of the Town Pillory, so that the administration of justice, in various forms, seems to have been meted out from this spot from the earliest to the present time. The north side of the Court House overlooks the large open space, known as Champ de Mars, still used as a military parade ground. The soldiers of France and the British troops have both trod this historic ground.

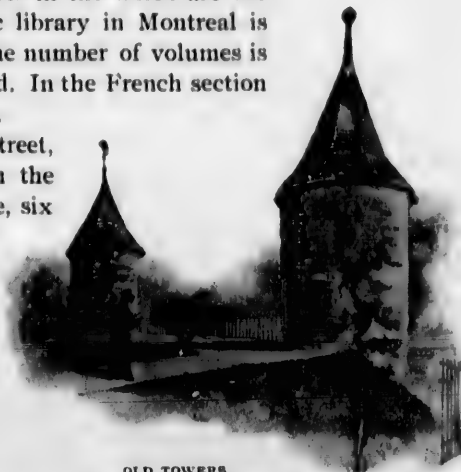
East of the Court House is the City Hall, a handsome structure of grey cut stone. From the tower a fine view is to be obtained.

The Natural History Museum, situated on University Street, is a small unpretentious building, but it will undoubtedly prove interesting to many of our visitors. The library is rich in scientific lore, while many priceless collections are to be found in the Museum. The Ferrier collection of Egyptian antiquities is probably the most perfect in America. The Natural History Society, which publishes the *Canadian Record of Science*, has its headquarters in this building.

The Art Gallery, located on Phillip Square, contains a fine collection, in which Canadian art is well represented, but frequently loan exhibitions are held here, when works are on view from the private galleries of wealthy citizens. Some of the most valuable pictures in the world are the property of Montrealers. The only public library in Montreal is the Fraser Institute, on Dorchester St. The number of volumes is somewhat small, though the selection is good. In the French section there are many exceedingly valuable works.

The Board of Trade, on St. Sacrament Street, is probably the largest public building in the city. It is a fine solid structure of red stone, six stories in height and well laid out. Many of the large manufacturers and corporations have offices in the building. The Board's exchange hall occupies an area of over four thousand square feet, while the safety vaults beneath cover an area of three thousand square feet

The Post Office, on St. James Street,



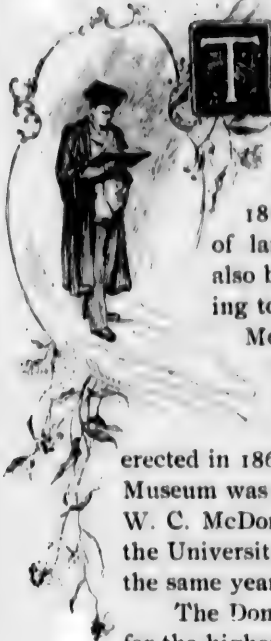
OLD TOWERS,
MONTREAL COLLEGE.

is built in the French Renaissance style, and has recently been altered to meet the requirements of the city, but it is still considered too small for the vast amount of business transacted.

The Montreal Water Works and its various stations and departments will prove interesting to those of a scientific turn of mind. The principal station is located at Point St. Charles.

EDUCATIONAL ESTABLISHMENTS.

MCGILL UNIVERSITY.



THE grounds and buildings of the University occupy a part of the ancient town of Hochelaga. A tablet, on Metcalf Street, in front of the western portion, reads thus: "Site of large Indian village, claimed to be the Town of Hochelaga. Visited by Jacques Cartier 1535." The University owes its origin to the Hon. James McGill, who, by his will, dated 8th of January, 1811, devised the estate of Burnside, consisting of forty-seven acres of land, with the manor house and buildings thereon erected, and also bequeathed the sum of £10,000 to the Royal Institution of Learning to establish a university to be distinguished by the appellation of McGill. With the proceeds of this estate the present institution was commenced, and a Royal charter obtained in 1821, and re-organized by an amended charter in 1852. The William Molson Hall, being the west wing of the College building, was erected in 1861, by the donation of Mr. William Molson. The Peter Redpath Museum was donated to the University, in 1880, by Mr. Redpath. In 1890 Mr. W. C. McDonald gave the McDonald Physics Building and its equipment to the University, which is one of the most valuable additions to McGill, and in the same year the Redpath Library was added as the gift of Mr. Peter Redpath.

The Donalda Building was the gift of Sir Donald A. Smith, as a college for the higher education of women, in connection with McGill.

There are also a large number of endowed chairs; and endowment for pension fund, and a number of exhibitions and scholarships. There are fifty professorships and thirty lectures on the staff of the University in the faculties of arts, applied science, medicine, law, comparative medicine, and veterinary science. The Peter Redpath Museum contains large and valuable collections in botany, zoology, mineralogy, and geology, arranged in such a manner as to facilitate work in these departments.

The Technical Museum, on the third floor of the Engineering building, will prove well worthy of a visit, the kinematic collection of models therein



BOARD OF TRADE BUILDING.

equipment of the Laboratory of Mathematics is very complete, including, besides all the ordinary instruments, a variety of apparatus specially constructed for this laboratory. The instruments of the Electrical Laboratory comprise two of Lord Kelvin's electric balances, a Thomson galvanometer, four D'Arsonval galvanometers, two Siemen's dynamometers, two Kelvin electrostatic voltmeters, a complete set of Western ammeters and voltmeters, resistance coils, etc.

The dynamo room is equipped with a 25 K.W. Edison dynamo, two 12 K.W. Edison dynamos, a 12 K.W. Mordey alternator made specially for the laboratory, a 7 K.W. Victoria dynamo, a 7 K.W. Fort Wayne dynamo, a 6 K.W. Thomson-Houston arc-light dynamo, a 15 K.W. Thompson-Houston incandescent dynamo, and a 5 K.W. Brush arc-light dynamo, all driven by an 80 H.P. MacIntosh & Seymour engine. The equipment of the lighting station comprises a 30 K.W. Edison-Hopkinson dynamo and a 30 K.W. Siemens dynamo. The accumulator room contains Crompton-Howell storage cells for a united capacity of eight hundred ampere hours.

Arrangements are being made for establishing a street railway testing department; a standard street railway motor and other apparatus have been kindly lent to the faculty by the Canadian General Electric Company for this purpose. The current standards comprise a Kelvin

arranged being perhaps the finest in America. The most interesting department, however, to our visitors will undoubtedly be that of the Faculty of Applied Science; consisting of three separate structures—the Engineering Building, the Physics Building and the workshops. The



THE McDONALD ENGINEERING BUILDING.

composite balance, which can be used as a voltmeter and Wattmeter; and two Siemens dynamometers. In this department, as an absolute current standard, is a duplicate of the Weber electro dynamometer, made by Latimer Clark, for the committee of the British Association, the coils of which were wound by Maxwell.

For insulation and capacity tests there is a suitable collection of reflecting galvanometers on the astutic, bullistic, differential and D'Arvonsal types. The most delicate of these has a resistance of 110,000 ohms, and a figure of merit of upwards of 60,000 magohms with a 20 second swing. There is also

a cylindrical air condenser of the Bu. pattern as a standard of capacity. The mica standard and subdivided boxes have been compared and tested and found to be above the average in quality and accuracy. For the purpose of observing the conduct under intense electric stress a transformer is in course of preparation capable of working up to 100,000 volts.



ROYAL VICTORIA HOSPITAL.

Many other of the scientific departments will repay a visit and prove highly instructive and interesting.

LAVAL UNIVERSITY.

The University of Laval occupies a relative position among the French as McGill does to the English. The faculties include divinity, law, medicine and arts. The lectures of the faculties have hitherto been delivered in various buildings scattered over the city, but a new and handsome building, on St. Denis Street, has lately been erected, which will prove of great benefit to the large number of students who attend the University.

The principal seat of Laval, however, is at Quebec. It rose out of the Seminary of Quebec, founded in 1663 by Mgr. Laval, the princely prelate who was the first bishop of the See, and who endowed the institution with his vast wealth. The University charter dates from 1852, when it took the name of its founder.



THE DE MAISONNEUVE MONUMENT.

HISTORICAL SPOTS, ANCIENT BUILDINGS, Etc.



TO the Numismatic and Antiquarian Society and to Mr. W. D. Lighthall in particular, the citizens of Montreal are indebted for the numerous tablets, which, with their inscriptions, indicate historical spots connected with the early history of the city, which would otherwise be lost sight of.

Among the names which stand out boldly in Canadian history is that of La Salle, who arrived in Montreal in 1666, and for a time lived in St. Paul Street. A tablet affixed to a building at the corner of St. Peter and St. Paul streets bears this inscription: "Here lived Robert Cavelier, Sieur de la Salle, 1668."

Having obtained a grant of land from the Seminary, he settled a few miles above Montreal and named the place Lachine.

A house still stands near the old tollgate at Lachine bearing the name of La Salle, and in which he is said to have lived.

settlement
and built Fort
Frontenac on the
site of the present
city of Kingston.

In his wanderings in the land of the Illinois, he pitched upon the present site of Chicago as a trading post. It was he, also, who followed the course of the Mississippi to the Gulf of Mexico. The late Francis Parkman, of Boston, thus writes of La Salle: "Beset by a throng of enemies, he stands, like the King of Israel, head and shoulders over all. He was a tower of adamant, against whose impregnable front hardship and danger, the rage of man and the elements, the southern sun, the northern blast, fatigue, famine and disease, delays, disappointments and deferred hopes, emptied their quivers in vain. The very pride, which, Cariolanus like, declared itself most sternly in the thickest press of foes, has in it something to challenge



ST. JAMES CLUB.

admiration. Never under the impenetrable mail of paladin or crusader, beat a heart of more intrepid mettle, than within stoic panoply that armed the breast of La Salle. America owes him an enduring memory, for, in his masculine figure, she sees the pioneer who guided her to her richest heritage." La Salle met with a tragic fate, being assassinated by two of his followers in Louisiana in 1687. The village of Lachine, founded by



MONTREAL STREET RAILWAY ON ST. CATHERINE STREET.

La Salle, is nine miles from Montreal and is visited by many thousands of visitors annually, who take the boat to enjoy the unique sensation of shooting the rapids.

The descent of the rapids under the guidance of an experienced pilot, is the most delightful and exciting adventure any traveller can undertake. Until within the last few years the boats leaving Lachine for the Rapids used to stop near the historic Indian village of Caughnawga to take on board the Iroquois pilot, Big John, who, in the fantastic costume of his tribe, would come on board to guide the boat in its perilous descent of the Rapids. Since the death of this famous pilot the boats have remained under the guidance of the ordinary navigators, though the services of Indians are still retained. To those making

the passage for the first time, the manner in which the boat speeds to within a few feet of the rocks, and then suddenly turns and passes them in safety, seems little short of miraculous.

Lachine, however, is associated with other, and gloomier memories; for on the night of the 4th of August, 1689, it was the scene of the most unheard of cruelties, the most terrible tragedy that has ever occurred in the annals of Canada, known as the:—

MASSACRE OF LACHINE.



SIR JOHN MACDONALD MONUMENT.

The principal cause which led to this horrible onslaught, on the part of the Indians, was the action of the French governor, de Denonville. Having received instructions from the Court of France to make prisoners a number of Iroquois chiefs, he induced them to visit Cataracqui, under pretext of attending a conference, and then despatched them to France, where they were treated as convicts. This action of the Governor, in 1687, aroused the ferocity of the various tribes and they determined on a revenge. For the next two years constant attacks were made on the fortified places along the river, and the garrisons were in a state of embarrassment. No idea, however, was entertained of the awful revenge premeditated or the preparations that were being made by the Iroquois for their murderous work. The morning of the 4th of August dawned bright and clear, and through the day all was quite and peaceful in the neighborhood of Lachine. Night crept on, and midst the increasing darkness of a storm, numerous canoes moved noiselessly from their place of hiding and shot across the water. As soon as they reached the shore hundreds of savage warriors disembarked and scattered themselves, till every home was surrounded and set on fire. Then to the yell of the Indian warwhoop, the terrified inmates who sought to escape were thrust back into the flames, or murdered with the tomahawk. Some few eluded the vigilance of the watch and were making their way to Montreal, but their retreat was cut off and they fell beneath the blows of their enemies. Vengeance was complete; the scene of havoc and ruin extended for miles, till not a house remained standing.



BANK OF TORONTO BUILDING.

Another spot of historical importance is located on St. Paul Street, between Place Royale and St. Sulpice Street, as being the birth place of Pierre Le Moyne in 1661. It was Le Moyne who conquered the Hudson's Bay for France in 1697, and who discovered the mouth of the Mississippi in 1699. He was also elected the first Governor of Louisiana in 1700. His brother, who founded New Orleans, in 1717, and was afterwards the Governor of Louisiana for 40 years, was born in the same house in 1680. Several other members of the family of Le Moyne, whose names appear in history, were born in this house.

De Catalogne House, on St. Vincent Street, is memorable as the home of one of the earliest engineers of Montreal. An inscription on the building reads: "1693. House of Gédéon de Catalogne, engineer,

officer and chronicler. Projector of the earliest Lachine Canal."

Another house that will interest visitors from the sister country, is situated on the south east corner of St. Peter and Notre Dame Streets. It is an old-fashioned building, but it was once the most magnificent dwelling in the city, with grounds extending across Notre Dame and St. James streets, and terminating at Craig Street. It was here that the gallant American, General Montgomery, took up his quarters in 1775, and it was afterwards occupied by generals Wooster and Arnold, of the United States Army. The interior decoration appears to have been very elaborate, for we find this description: "The principal rooms were wainscoted up to a certain height, and, above that, tapestried richly with scenes from the life of



WINDSOR HOTEL.



WINDSOR HALL.

Louis XIV. A tablet is placed on the house, which reads: "Forrétier House. Here General Montgomery resided during the winter of 1775-6."

PLACE D'ARMES.

In this Square, past and present interests are united. On the north side is the Bank of Montreal, one of the wealthiest institutions on the Continent, having a capital of \$12,000,000, and a reserve fund of \$6,000,000. The style of its architecture, of the Corinthian order, forms a pleasing contrast to the buildings which surround it. The sculpture of the pediment, representing Canadian scenes, is the work of Mr. Steel, R.S.A. Some of the frescoes of the interior are considered very fine and should be seen. The northern boundary of the city, in 1721, extended as far as this building, the stone fortifications running through its site.

Facing the Bank, on the south side, is the parish Church of Notre-Dame, with its two impressive towers, which rise to a height of 227 feet. The length of the church is 255 feet, with a breadth of 135 feet and a seating capacity of 14,000. To see this vast edifice crowded, as it is on important festivals of the church, such as midnight mass at Christmas and similar occasions, is a most imposing spectacle.

A new chapel at the southeast of the church has been recently consecrated, and is a beautiful specimen of ecclesiastical architecture. The view obtained from the west tower is a remarkable one; on a clear day, in the far distance, may be seen the hills of Vermont. The great bell, named *Gros Bourdon*, weighing 24,780 lbs., is also located in this tower. Many fine specimens of art are to be found in the church, which is open at all times. Adjoining the church is the Seminary of St. Sulpice, which is interesting as preserving the ancient style of the architecture of the building of the city. Many curious volumes are to be found in the library of the seminary, one of special interest being the

first parish register of the church, in which the signature of de Maisonneuve, the founder of Montreal, frequently occurs.

On the eastern corner of the square is a tablet reading thus: "In 1675, here lived Daniel de Grésolon, *Sieur Dulhut*, one of the explorers of the Upper Mississippi, after whom the city of Duluth was named."

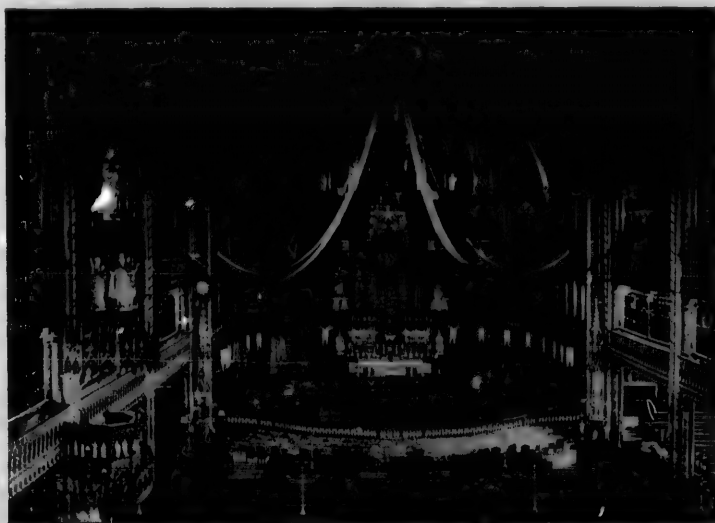
A little further east, is the site of the house of the founder of another American city, distinguished by a tablet reading: "In 1694, here stood the house of La Mothe Cadillac, the founder of Detroit."

The whole of the ground in this vicinity possesses a



YOUNG MEN'S CHRISTIAN ASSOCIATION BUILDING.

charm for the antiquarian and historian. The centre of the square, now adorned by a monument to the founder of the city, was once the scene of a battle. The event is recalled by an inscription on a building to the east of the Bank of Montreal: "Near this square, afterwards named La Place d'Armes, the founders of Ville Marie first encountered the Iroquois, whom they defeated; Chomedey de Maisonneuve killing the chief with his own hands, 30 March, 1644." The monument, which is a very fine design, illustrates some of the principal events in the founder's career, and also perpetuates the memory of some of his contemporaries and companions. With great ceremony the monument was unveiled on July 1st, 1895, by his Honor, the Lieutenant-Governor of Quebec, the Honourable J. A. Chapleau; who, in the course of a brilliant speech, said: "What glory can be more pure than that of the founder of Montreal? What glory can be greater than that which borrows from no one to enhance its greatness! which imposes itself to the admiration of those who witness its birth and who see its development. Yes so long as our hearts can beat at the rehearsal of that great drama through which, amidst so much greatness, so many sacrifices, so much grief, and so much heroism, the Canadian nationality, which is our strength, formed itself, the memory of de Maisonneuve cannot perish. The man may die, but the aroma of his virtues is immortal; centuries and generations never grow old."



INTERIOR OF NOTRE-DAME CHURCH.

DOMINION SQUARE.



ON this square, occupying a magnificent site, is the Windsor, the finest hotel in Canada. Of the excellence of its appointments many of our visitors will have an opportunity of judging during their sojourn in Montreal, as the headquarters of the American Street Railway Association, will, for the time being, be here. The Windsor is the most popular hotel in the Dominion, and, under the direction of the genial manager, Mr. H. S. Dunning, visitors receive every attention and courtesy. It has accommodation for upwards of seven hundred guests, and the large hall adjoining, known as the Windsor Hall, with a seating capacity of 1,600, is to be used for the meetings of the convention. It can be utilized as a ball room or place for private or public gatherings. Both in winter and summer a large amount of business is done, and in past years, when the winter carnival was held on the square, a splendid view of the ice palace and other buildings could be obtained from the windows of the hotel. Facing the southeast corner of the hotel is the Macdonald memorial, erected to the memory of the late Hon. Sir John A. Macdonald, Prime Minister of Canada and the "Father of Confederation." The monument was unveiled on the 6th of June, 1895, by Lord Aberdeen, the present Governor-General. The bronze figure, under the canopy, represents the Premier in the robes of a Grand Commander of the Bath, of which order he was a member. The canopy is crowned with a figure of Canada, encircled by the nine provinces of the Dominion. The bas relief panels are illustrative of scenes of Canadian industry. The figures were designed and modeled by Mr. Wade, an English sculptor.

At the southeast of the square, facing Dorchester Avenue, is St. James' Cathedral, claimed to be the largest church on the continent. The foundations were commenced in 1870, and much of the work is still incomplete. The ground plan of the cathedral is designed in the form of a cross, 330 feet long and 222 feet wide, after the model of St. Peter's at Rome.

The dome, which always attracts visitors, is 70 feet in diameter and rises to a height of 210 feet inside, while the extreme height to the top of the cross is 250 feet. Adjoining the cathedral, on the south side is the palace of the Roman Catholic Archbishop of Montreal.

Facing the west end of the cathedral, on Dorchester Street, is the new stone and brick structure of the Y.M.C.A. The appointments of this building are very complete and it has a large membership.

Located at the southwest of the square is the massive grey stone building

of the Canadian Pacific Railway. The exterior appearance would scarcely indicate that it was the terminus of a modern railroad ; its substantial tower and turrets, with their ancient loop-holes, suggesting, rather, the days of feudal might. However, any such illusion is immediately dispelled on going into the interior, where the luxurious waiting rooms and admirably arranged offices point to the highest civilization of the nineteenth century.

Descending the hill we approach the chief station of the Grand Trunk Railway, a handsome and well appointed building of red brick.



ROYAL ELECTRIC CO.'S NEW FACTORY.

Within the limits of a little work of the present scope it is impossible to give anything like a complete list of the places of historical or legendary interest, but the following places will repay a visit : The Jesuits Church, on Bleury Street, containing many valuable paintings ; the Convent of the Grey Nuns, the Royal Victoria Hospital, the Church of Notre - Dame - de - Lourdes and the Hôtel-Dieu. We might also mention the new

factory of the Royal Electric Company, on Queen Street.

A tour round the city in the company's cars will reveal many other places of interest and will give an idea of its wealth and extent. St. Louis Square and Viger Gardens, two of the public squares of the city, are passed on the St. Denis Street line.

ADAM DOLLARD.

" Beside the dark Ottawa's stream, two hundred years ago,
A wondrous feat of arms was wrought which all the world should know. "

In an old French street, off St. James Street, between St. Peter and McGill streets, known as Dollard Lane, is a tablet reading : " To Adam Dollard des Ormeaux, who, with sixteen colonists, four Algonquins, and one Huron, sacrificed their lives at the Long Sault of the Ottawa, 21st May, 1660, and saved the Colony. "



THE story of the heroism of Dollard has been told over and over again in prose and verse, and is familiar to a large number of Americans thereby. A few remarks, however, at this period may prove interesting. At the time that Dollard appears upon the scene, the garrison of Montreal, or Ville Marie, was held in a state of terror by the threatened invasion of the Iroquois, who had vowed to exterminate the French from the face of the earth and carry off the nuns to their villages. Adam Dollard, a young man lately arrived from France, had conceived the purpose of ascending the Ottawa to an advantageous post and surprising the Iroquois, and then inflicting such punishment upon them as would relieve the garrison of the strain which was paralyzing it. Dollard and his followers, in all about sixty-three, after having attended mass at the parish church,

set forth on their encounter, marching by night until they reached the foot of the Long Sault of the Ottawa. Scarcely had they taken up a position when a band of the enemy, numbering two hundred, was seen descending the rapids in canoes. Dollard and his men then fortified themselves in an old Algonquin fort and successfully repulsed the enemy. The next day the forces of the Iroquois were strengthened by five hundred Mohawks, and fighting was kept up under these conditions day and night for the space of ten days. The French were now suffering the pangs of thirst, and thirty of them, on the promise of life, leapt over the palisade and joined the enemy.

Dollard was now left with only twenty-two followers, and seeing the weakness of his position, the Iroquois sent demanding the surrender of the fort, but their message was answered with fire. This increased the ferocity of the Indians, and with a determined savage onslaught they rushed over the bodies of their slain and scaled the palisade amidst a scene of the wildest confusion, the infuriated Iroquois engaged in a hand to hand encounter, and of the twenty-two who remained faithful to Dollard, only one, a Huron escaped, and reached Montreal. The accounts that he brought to the priests of the Seminary is to be found in the register, which may be seen in the library before referred to. After the capture of the fort those who were not dead were eaten by the savages. The bravery of those twenty-two heroes so awed the Iroquois that they abandoned the project of a combined attack on Montreal.

"What tho' beside the foaming flood entombed their ashes lie,
All earth becomes the monument of men who nobly die."



NO description of Montreal, however, would be complete without mention of its sports. The city is famous for its athletic clubs. The largest body of athletes is the Montreal Amateur Athletic Association, whose magnificent grounds are situated on St. Catherine Street west, on the direct line of the cars. The national game is lacrosse, which is carried to greater perfection here than elsewhere. The Shamrock Lacrosse Club, the present champions, have within the last few months opened up their beautiful grounds in the north of the city. The athletic club house, behind the mountain is the winter resort of the snowshoers, who tramp over the snow-clad fields and mountain roads by night, to the astonishment of those unaccustomed to the severity of a Canadian winter. The Montreal Hunt Club have a fine pack of hounds, which may be seen at the kennels. As the winter is the season for sports, when the skating rinks and curling clubs are in full swing, very little idea can be obtained at the present of the extent or of the enthusiasm with which the various sports are indulged in.

We will now proceed to make a brief inspection of the system of the Montreal Street Railway.

It is scarcely possible for a tourist glancing at the system to-day with everything in working order, to conceive the revolution effected in transportation in the space of three years, since the first application of electric traction. In June, 1891, however, the receipts of the Company were \$54,000, while in June, 1895, they reached \$111,000. The total number of passengers carried in June, 1895, being 2,600,000. The old method of travel was by horse cars running on tracks in the summer, by sleighs in the winter and by cumbersome busses in the spring, until the thaw admitted the use of the tracks. All this, however, is a thing of the past, and travel instead of being irksome, is now a pleasure. The various mechanical departments may be studied with advantage. Those devoted to science will find much with which they are familiar, while the ordinary visitor will discover much that is novel and instructive.

The difficulties which presented themselves to the Company at the introduction of the system were, the severity of the grades of many of the streets, and the depth of the snowfall. An idea of the grades of the streets may be obtained from the following. St. Lawrence Street rises 68 feet in a distance of 1,500 feet with a maximum grade of eight per cent. for about 150 feet. On Windsor Street there is a rise of 70 feet in a distance of 1,500 feet with a maximum grade of 10 per cent. for about 200 feet, and on St. Lambert's Hill a short grade of 11 per cent. An idea of the vast amount of labour entailed after a snow storm may be gathered from the fact that in one month (December,



E. LUSHER, SEC. TREAS.
J. F. HILL, COMPTROLLER.

L. J. FORGET, PRESIDENT.
G. C. CUNINGHAM, MANAGER & CHIEF ENGINEER.

JAS. ROSS, VICE-PRES. & MAN. DIR.
D. McDONALD, SUPT.

OFFICERS OF THE MONTREAL STREET RAILWAY COMPANY.

1893) the fall aggregated 40.4 inches, and the average of 18 winters is 121 inches per annum.

Immediately after the franchise was granted by the City Council, the contract for the reconstruction and equipment of the system for electric traction was given to Mr. James Boss and Mr. Wm. McKenzie, and the first electric car was set in motion on the 21st September, 1892.

The snow fall during the first winter was particularly heavy, but the work of the huge sweepers demonstrated beyond all dispute that a car service could be operated with success during the most severe season.

A close watch is kept by the Superintendent on the reports of the weather bureau, and on the indication of a coming storm a staff of men are held in readiness to cope with the fall. As the sides of the tracks have to be preserved for the ordinary traffic on sleighs much of the snow gathered by the sweepers has to be removed, half of this expense, which is considerable, is however borne by the city.

The Company is under the management of Mr. Granville C. Cunningham, who is also their Chief Engineer. The Montreal Street Railway Company is regarded as one of the most flourishing corporations of the city, and few street railway corporations in America are in a better position financially. Its capital consists of one million dollars of bonds and four million dollars of common stock (all paid up) on which latter eight per cent. is paid annually.

The system is quite an extensive one, the Company at present operating seventy-four and one-quarter miles of track, and additions are constantly being made. A new line was recently opened to the Shamrock Lacrosse Grounds, and a line to reach the summit of the mountain, without touching any of the present avenues of approach, is contemplated. The completion of this project would prove a boon to the city. The rolling stock of the Company

consists of one hundred and seventy motor cars and one hundred and four trailers, most of which are of Canadian manufacture. In addition to this there are fourteen snow sweepers owned by the Company, eight of which were made in their own shops.



CAR HOUSE, ST. HENRY.



POWER HOUSE, MONTREAL STREET RAILWAY.

Some of the streets are laid with stone, others with wooden blocks, and a number with asphalt. On all those which have a concrete foundation the rails are laid directly on the concrete, and this system is apparently the best adapted to the climate. The rails are of English manufacture, of the grooved girder type, six and one-half inches high and weighing seventy-two pounds to the yard. On laying the rails on streets already paved the centre portion was removed to the surface of the concrete, shallow trenches were then made to admit the rails and a cement grout of one part cement to three of sand poured into the trenches to cover the flanges. The rails on one side of the track are connected with those on the other by means of iron tie rods. On streets paved with asphalt, scoria block headers are used next to the rails. Fine specimens of track work may be seen at the intersection of Bleury and St. Catherine streets and St. Catherine and St. Lawrence streets.

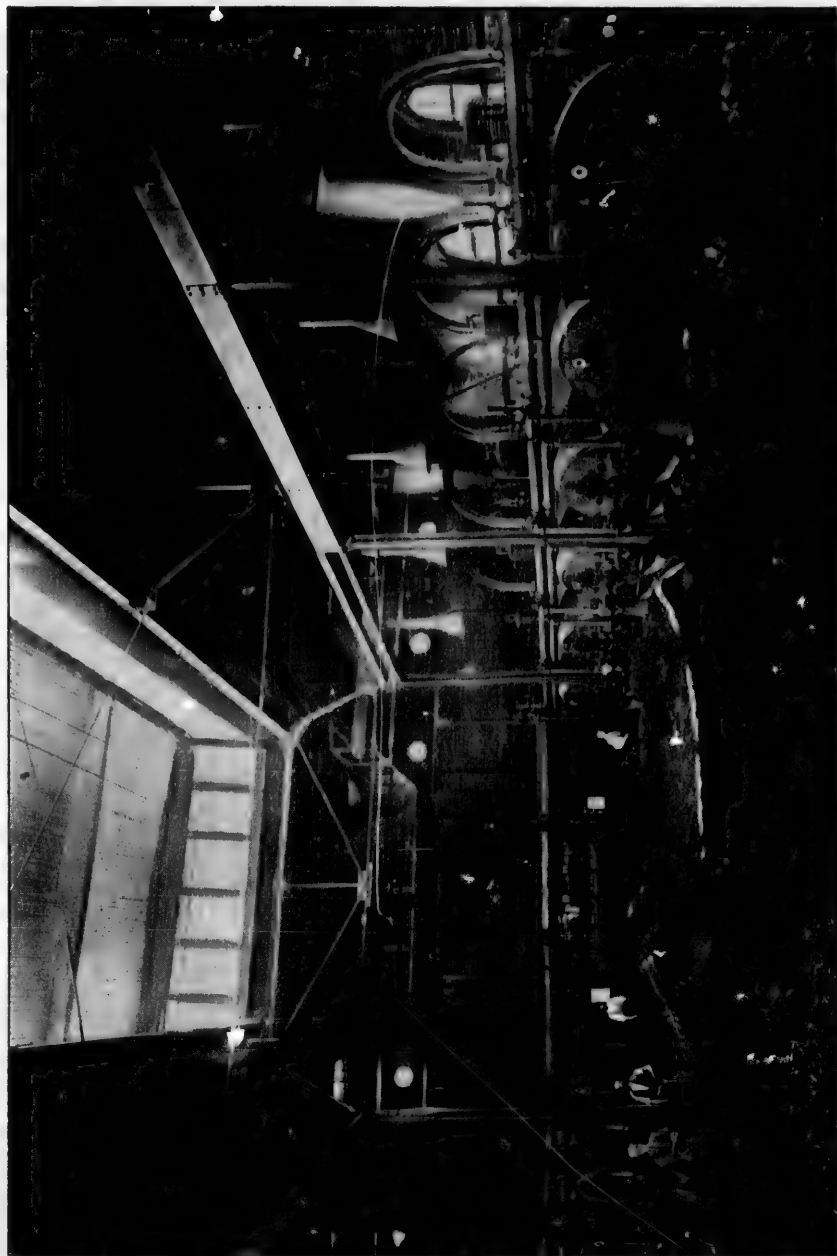
The overhead construction is of the standard type. For the most part iron poles were used, at an average distance of one hundred and ten feet. The

trolley wire throughout the line is No. 00, B. & S. gauge, of hand drawn copper, supported by "West End" hangers with a mechanical clip. The span wire employed is No. 9 B. & S. three ply galvanized iron, and is attached to the poles by Brooklyn strain insulators. The feeders are of No. 0000 copper wire, and are both solid and stranded. Additional feeders of 500,000 C. M. insulated have been added this year.

The frontage of the Power House, on William Street, is two hundred and nine feet, with a depth of two hundred and thirty-three feet. It is divided into two sections one used as a boiler room and the other for the engines and dynamos. The floor of the building is seven feet above the street level to prevent the possibility of interruption during the prevalence of floods.

The Engine and Dynamo Room is a model one in which several hours may be profitably spent. This department is two hundred and thirty-three feet long by eighty-nine feet wide. Running at regular intervals down the length of the room are arranged six large Corliss compound condensing engines of six indicated horse power each, manufactured by the Laurie Engine Co. of Montreal. The fly wheels have a diameter of twenty-two feet, the gross weight of each is forty-two tons. When in motion at a speed of seventy revolutions per minute the peripheral velocity is about four thousand nine hundred feet. Each engine is provided with two governors, one of the Porter type capable of controlling the speed within two per cent. of the normal rate, and a governor having an automatic valve which shuts off the steam when the engine reaches ten per cent. above the normal, so that should the ordinary governor become defective, damage is quickly prevented. Each of the safety governors is also provided with a hand lever by which the engine may be quickly brought to a standstill. The cylinders are steam jacketed and have a diameter of twenty-four inches and forty-eight inches for the high and low pressure respectively, with a stroke of four feet. The engines have a solid brick and cement foundation carried down eight feet below the street level.

The dynamos run the length of the building opposite the engines. There are twelve No. 80 Edison generators of 200 K. W. capacity each, four of which are driven by one engine with double tandem twenty-four-inch belts. There are also six multipolar generators of 300 K. W. capacity each, manufactured by the Canadian General Electric Company. The six multipolar generators are driven by three engines, two to each, by a fifty-four-inch belt as shown in the illustration. The leads from the generators to the switch board are conducted along the basement on racks with porcelain insulators. The leads of the Edison generators consist of thirty-six cables, each having a cross section of 250,000 circular mils; while for the multipolar generators there are eighteen



BOILER ROOM, POWER HOUSE, MONTREAL STREET RAILWAY.

stranded cables with a cross section of 500,000 circular mils. Under the generators, in the basement, are six condensers, one for each engine, the water for which is obtained from the Lachine Canal through a twenty-inch main.

The Engine Room is provided with two travelling crane of ten tons capacity each. The room presents a striking appearance at night when illuminated with over two hundred incandescent lamps.

The most interesting feature of this department, however, remains to be seen in the switch board. Here all the vast machinery, with its terrible power, is under absolute control. With a touch of the hand the mysterious power is sent on its way to perform its Herculean feats, and, with the same ease, its influence is rendered negative. There are many delicate instruments displayed here, the true value of which is only intelligible to the scientific mind.

The board is constructed of terra cotta lumber, sixty feet long and eleven feet high, reached by a stairway terminating in a gallery running the complete length and protected by a polished railing. Along the top is a row of forty-two incandescent lamps, one over the instruments of each circuit.

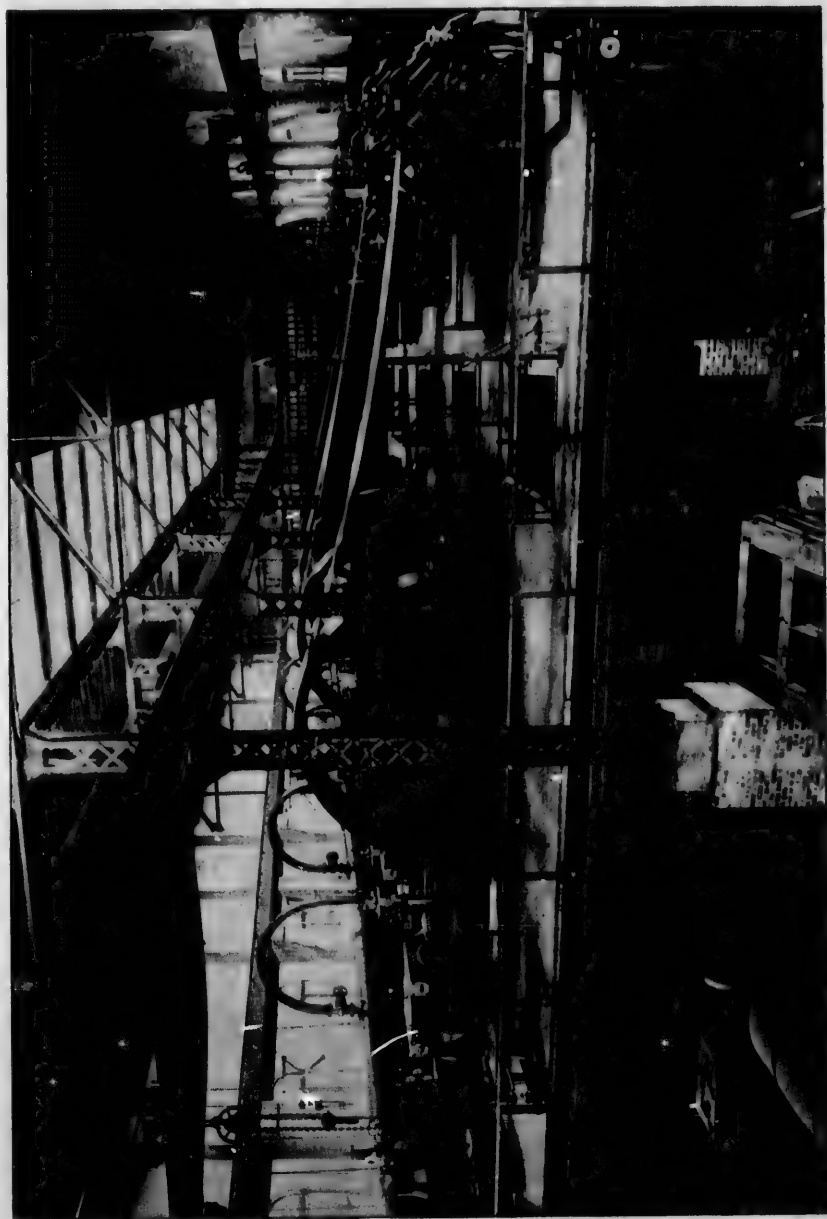
At the further end of the board are arranged the instruments of the Edison generators, consisting of an ammeter, a triple pole switch, an automatic magnetic circuit breaker, and a switch for opening the shunt circuit of the dynamos.

The instruments of the six multipolar generators are the same, though of larger capacity. The switches on the board are of polished metal placed on white marble slabs, which gives the whole quite a handsome appearance.

The rehostats for controlling the currents of the generators are operated on the gallery by means of a shaft, one for each generator. The system is divided into nine independent sections, which are controlled from the board. To supply these systems there are twenty-four feeders, the instruments of each feeder consisting of an ammeter, an automatic magnetic circuit breaker, and a switch.

At the end of the gallery is the voltmeter and the main circuit ammeter, both of which are Weston station instruments. Over these are arranged a recording voltmeter, a thermometer, a barometer and a clock. In the centre of the board is an indicator arranged with a series of signals for communication with the engineers in charge of the several engines.

Passing through a doorway leading to the reverse side of the board an entirely different picture is presented. Here there is a complete maize of cables connected with the instruments, and each having a numbered label. The feeders pass out of the building through an opening in the wall, and are thence distributed in their several directions. A small tank placed against the window through which the wires pass, is made use of during a thunder



ENGINE AND DYNAMO ROOM, POWER HOUSE, MONTREAL STREET RAILWAY.



NOTRE-DAME STREET, MAISONNEUVE

Taken 13th February, 1895, after the great storm of 8th and 9th February.

storm as a protection against lightning by means of a switch ; there are also two other instruments for protection in this respect.

Leaving this department we turn to the Boiler Room, which is a division of the main floor. The dimensions of the room are one hundred and seven feet by one hundred and fourteen feet.

There are fifteen Lancashire boilers of three hundred horse power each, made by Daniel Adamson & Co. of Dukinfield, England, arranged in two batteries. They have solid welded flues jointed together by Adamson's patent expansion joints, and are constructed of nine-sixteenths-inch steel plates, with eleven-sixteenths-inch end plates. Each boiler is fitted with a dead load safety valve, a six-inch steam nozzle, a combined low water alarm and safety valve, and a Government pop valve on the cover of the man hole. The gasses from each furnace pass through the flues of its boiler, then return under the boiler and go back along its sides into the main flue. From this place, at a temperature of about four hundred and fifty degrees, they pass into a Green economiser, which heats the feed water to a temperature of about two hundred and

fifty degrees. Two automatic dampers control the draft at the chimney, one for each battery of boilers.

The boilers are fed by four Northey pumps through duplicate pipes. The consumption of coal is considered to be small, the average pounds of coal per electrical horse power during four months being 2.78. The chimney is one of the highest in the city, and has a height of one hundred and eighty-six feet above the fire grate. The core is circular with an inside diameter of nine feet.

The Repair Shops and Car Stations of the Company are situated on Coté Street, in the centre of the city. The buildings, which occupy the site of the stables in the days of the horse cars, are constructed of red brick with stone basement. The main building is of two stories and basement, heated by steam and lit at night by incandescent lamps. A large portion of the upper floor is used for car body repairs, and the remaining part for armature winding and electrical repairs. Another building is connected with this room containing



SWITCH BOARD, POWER HOUSE, MONTREAL STREET RAILWAY.

an oven for baking armatures, the remaining part of the structure being devoted to offices of the shop superintendents, stock and pattern rooms. On the ground floor, under the electrical repair room, is located the machine shop, very completely equipped with machinery, the power for which is obtained from the trolley lines. Four tracks run into the building capable of accomodating sixteen cars. Under each of the tracks is a pit provided with a truck and lift for the repair of the heavy parts of the motors. There is also a large electric elevator capable of lifting the entire body of a car to the repair shop. Another building adjoining has storage capacity for twenty cars.

In connection with this building is an emergency station with comfortable quarters for a staff of men always in readiness to respond to fire alarm calls, or work on the track requiring immediate attention.

A very substantial building, with a capacity for fifty-four cars, and appliances for making ordinary repairs, is located at St. Henri, and another, with a capacity for thirty-seven cars on St. Denis Street.

The General Offices of the Company are on Craig Street at the corner of Place d'Armes, and on the opposite corner are new and commodious offices now in course of erection.

A. G. D.

THE MONTREAL PARK & ISLAND RAILWAY CO.

The Montreal Park & Island Railway Company is to the suburbs of Montreal, what the Montreal Street Railway is to the city of Montreal. At present, it has eighteen miles completed and in operation, and it is confidently expected that one hundred and twenty-five miles will be constructed when the plans of the Company have been put to execution. Most advantageous franchises have been obtained from the greater part of the municipalities on the Island of Montreal. This work is greatly due to the efforts of Mr. A. J. Corriveau the promoter of this enterprise.

The Company is now operating two main lines, one running up St. Lawrence Street, and thence through the country to Back River; the other running up Bleury Street and Park Avenue, through Montreal Annex, Outremont, Côtes-des-Neiges, Mount Royal Vale, Notre-Dame-de-Grâces, to Westmount, thus making a complete circuit around the two mountains.

The first line to "Back River," or more properly speaking to Sault-au-Recollet, lies along the Rivière-des-Prairies and runs through a very pretty country. This little village of Sault-au-Recollet is a pleasure resort with a

good hotel and a grove along the river reserved for picnics. The Sacred Heart Convent and the Jesuits' College are close at hand, beautifully situated near the river.

It is intended to extend this line to St. Vincent-de-Paul, a town of 4,500 inhabitants.

This line is seven and one-half miles long and is double tracked for a distance of two miles, to the Shamrock Lacrosse Grounds, which have recently been inaugurated. The road bed consists of a fifty-six pound T rail, laid on tamarack and cedar ties, six inches by eight inches by eight feet, spaced two feet between centres, in rock ballast. Four-bolt fish plates, eighteen inches long, are used, and the track is bonded with "Chicago" bonds, manufactured by the Washburn & Moen Manufacturing Co.

Bracket construction is used wherever possible on this line.

The Cote-des-Neiges line leaves the city at Fletcher's Field, on the slope of Mount Royal, and runs all the way around the two mountains to Westmount, where it connects with the Montreal Street Railway. This line, which is double tracked, is six miles long and offers a most attractive ride to those who are lovers of beautiful scenery. It is built in the same way as the Back River line.

The Company own twelve closed motor cars, seven open motor cars and seven open trail cars. Nine of the closed cars were built by N. & A. C. Larivière and two by the J. C. Brill Company, while the open cars were built by the Crossen Car Company, of Cobourg, and Patterson & Corbin, of St. Catharines. The motor and trail trucks were built by the Canada Switch and Spring Company, the Peckham Motor Truck and Wheel Company and the J. C. Brill Co.

The Company own four number three and eight number twelve Westinghouse motors.

It has not yet built its main power house ; at present it is operating a temporary power station at Mile End, in which are placed one 200 K. W. and one 100 K. W. Royal Electric four-pole generators, one Cooper-Corliss engine of three hundred horse power, one Corliss engine of one hundred and fifty horse power capacity, and four return tubular boilers of one hundred and twenty-five horse-power capacity each, built by local manufacturers.

The Company's officers are as follows : President, Hon. L. Beaubien ; Vice-President, Hon. J. R. Thibaudeau ; Treasurer, R. L. Gault ; Manager, Henry Holgate ; Chief Engineer, Jos. R. Roy.

EXHIBITORS AT THE CONVENTION OF THE AMERICAN STREET RAILWAY ASSOCIATION.

- | | |
|--|---|
| New York Car Wheel Co., Buffalo, N.Y. | Walker M'fg. Co., Cleveland, Ohio. |
| Taunton Locomotive M'fg. Co., Taunton,
Mass. | "The Electrical World," New York. |
| K. W. Blackwell, Montreal. | Chas. Scott Spring Co., Philadelphia. |
| Fitzgerald Van Dorn, Chicago. | Peckham Motor Truck and Wheel Co., New
York. |
| Adams Westlake Co., Chicago. | Standard Paint Co., New York. |
| Cutter Electric Co., Philadelphia. | Consolidated Car Fender Co., Providence,
R.I. |
| Theo. Euphrat, Darien, Conn. | Taylor Electric Truck Co., Troy, N.Y. |
| Scarritt Furniture Co., St. Louis, Mo. | Keller Printing Co., New York. |
| American Rail Joint M'fg. Co., Cleveland. | Forest City Electric Co., New York. |
| Ohio Brass Co., Mansfield, Ohio. | The Aakron Insulator and Marble Co.,
Aakron, Ohio. |
| H. W. Johns M'fg. Co., New York. | New Haven Car Register Co., New Haven,
Conn. |
| Meaker M'fg. Co., Chicago. | The Macpherson Sand Box Co., Troy, N.Y. |
| Taunton Locomotive M'fg. Co., Taunton,
Mass. | John A. Roebling Sons & Co., New York. |
| The Bushnell Co., Montreal. | Chapman Valve M'fg. Co., Indian Orchard,
Ind. |
| The Fiberite Co., Mechanicsville, N.Y. | Lamb & Chapman, Montreal. |
| C. W. Henderson, Montreal. | Hogan Boiler Co. |
| U. S. Projectile Co., Brooklyn. | Mica Insulator Co., New York. |
| Consolidated Car Heating Co., Albany. | Pennsylvania Steel Co., New York. |
| The Crane Co., Chicago. | Geo. S. White, Chicago. |
| Hartford Woven Wire Mattress Co., Hart-
ford. | James Steel, Montreal. |
| Sterling Supply and M'fg. Co., New York. | Lobdell Car Co., Wilmington, Da. |
| W. T. Bonner, Montreal. | Benedict & Burnham M'fg. Co., Waterbury,
Conn. |
| Carter Brake Co., Chicago. | Whittingham Electric Car Heating Co.,
Baltimore, Md. |
| The "Street Railway Journal," New York. | Cambria Iron Co., New York. |
| International Register Co., Chicago. | D. C. Sweet, Springfield, Mass. |
| St. Louis Register Co., St. Louis, Mo. | |
| E. P. Burrowes Co., Portland, Me. | |
| Standard Cable Co., New York. | |



NOTES OF INTERES TO VISITORS.

THE WALKER MFG. CO., Cleveland, Ohio, have a very large and complete exhibit of street railway apparatus. Their showing is a very comprehensive one, embracing as it does such a variety of articles, of which we mention a few of the leaders.

A switchboard, complete in all its appointments. Two motor trucks, in each case properly equipped, one of twenty-five horse power and one of fifty, both double equipments with necessary controllers and switch boxes.

One motor, arranged in such a manner as to show the interior working.

Two armatures, one of which is complete and the other one-quarter wound, showing method of winding and insulation.

They have also a model of cable drum and rope pulleys and many other features which must be seen to be appreciated.

The Walker Manufacturing Co.'s exhibit, both in detail and as a whole, reflects great credit on the firm. The space occupied is a very large one and great taste has been displayed in arrangements.

The exhibit of itself is a feature of the Exposition, and will no doubt come in for a large share of patronage.

The character of the goods turned out by this company has been such as to stamp them as of a very high order, and success in the future seems assured.

A competent staff of men are in constant attendance and any information desired will be cheerfully given. We trust the enterprise shown, which is characteristic of the Walker Mfg., Co. will be amply repaid.

HENRY BIRKS & SONS.—A stay in Montreal would be incomplete without at least one visit to the establishment of Henry Birks & Sons. They are our leading jewellers, and the largest diamond importers in Canada. The business of this firm is not confined to Montreal only, as their customers hail from every town in the country, from the Atlantic to the Pacific coasts. A very large part of their business is done with American tourists, the absence of duty on unset diamonds in Canada, enabling them to quote much lower prices than those current in the States, where the duty is twenty-five per cent. Of course, to save the Canadian duty it is necessary to import the diamonds unset and mount them here, which brings us to a very important branch of this business, viz., the manufacturing of fine jewellery. This department is under the direct supervision of a practical member of the firm, a graduate of the celebrated Massachusetts Institute of Technology, and no piece is allowed to leave the factory without first passing his critical examination.

Their finest pieces are not shown in the cases, but are kept for private view in the diamond office, thus ensuring the designs from becoming common. They are, however, always gladly shown to visitors, who need feel under no obligation to buy.

A glance at the show cases of Henry Birks & Sons is sure to be of interest to all lovers of the beautiful. Here may be seen quaint designs in antique Dutch silver; the latest fashion in Vienna leather goods, and English silver galore.

A DIVIDEND PAYING COMBINATION.—The fluctuating character of the load, found in street railway practice, necessarily requires the operation of the generators at the load of least economy during the greater portion of the time, and, as a result, the dividend paying ability of the property is greatly decreased.

To be sure there have been designed many generators which show excellent results when run at their rated capacity, but the moment the load drops off or goes beyond this point much power is uselessly expended in their operation. And, furthermore, the destructive effects due to the sparking which takes place, are a source of no small amount of expense for commutator repairs.

THE THOMPSON-RYAN DYNAMO, which, in its perfected form, is now being manufactured by the J. H. McEwen Manufacturing Company, of Ridgeway, Pa., has shown itself to be remarkably efficient at all loads, and also to be absolutely sparkless up to 25 per cent. overload without changing the position of the brushes.

The machine is of the multipolar type, having from ten to fourteen poles. The field castings are of steel of high magnetic permeability. The outer casting, which is in two parts, carries the field coils proper, and is so constructed as to afford absolute protection from mechanical injury to the windings. Fitted closely within this outer field casting is a slotted ring, a single casting, into which the balancing coils are wound. It is this feature of the machine which renders it so highly efficient. These coils prevent all armature reaction and produce a field which increases with the load and prevents sparking.

The armature is of the bar wound type and carrying, as it does, a greater amount of copper than other generators makes the output considerably larger for a given size.

The McEwen High Speed Automatic Engine is of most modern design, all parts are standardized and built of the best material. The guarantee, under which this engine is sold, speaks for itself.

GUARANTEE.—The engine shall not run one revolution slower when fully loaded than when running empty, and a reduction of boiler pressure from the greatest to that necessary to do the work will not reduce the speed of engine one revolution. Any engine failing to meet this guarantee becomes the property of the purchaser upon the payment of one dollar.

For further particulars and beautifully illustrated catalogues of engines and dynamos, address The J. H. McEwen Manufacturing Company, Havemeyer Building, New York.

FURS.—Delegates and visitors to the convention and exposition should bear in mind that Montreal is the place for furs of all descriptions, and that John Henderson & Co., whose advertisement appears in another place, stand at the head of Canadian furriers. The rarest and costliest goods can be found in their stock, which is very large and selected with rare judgment. Any article bearing the name John Henderson & Co. can at once be taken as good of its kind.

Do not miss the opportunity of examining one of



LOADED FOR BASE BALL—SEVENTH STREET CABLE RAILWAY, WASHINGTON, D.C.

E. SAXTON, Cable and Electric Railway Contractor, WASHINGTON, D.C.

CABLE RAILWAYS BUILT BY E. SAXTON.

Grand Avenue and Fifteenth Street Line, for	Grand Avenue Railway Co., Kansas City, Mo.
Grand Avenue and Westport Line	" Grand Avenue Railway Co., Kansas City, Mo.
Holmes Street Line	" Holman Street Railway Co., Kansas City, Mo.
The Loop Line	" Metropolitan Railway Co., Kansas City, Mo.
Seventh Street Line	" Washington and Georgetown R.R. Co., Washington, D.C.
Eleventh and Thirteenth Streets Line	" Tacoma Railway and Motor Co., Tacoma, State of Washington.
Navy Yard and Georgetown Line	" Washington and Georgetown R.R. Co., Washington, D.C.
Fourteenth Street Line	" Washington and Georgetown R.R. Co., Washington, D.C.
Blue Line	" Baltimore City Passenger R.R. Co., Baltimore, Md.
N. Y. Ave. and H. Street Line	" Columbia Railway Co., Washington, D.C.

JUST COMPLETED:

NINTH STREET UNDERGROUND ELECTRIC LINE OF THE . .

METROPOLITAN R. R. CO., WASHINGTON, D. C.

NOW UNDER CONTRACT:

**EAST AND WEST (MAIN) LINE METROPOLITAN R. R. CO., WASHINGTON, D. C.
UNDERGROUND ELECTRIC.**

**OFFICE: CENTRAL POWER STATION,
WASHINGTON, D.C.**

the best stocks to be found. This firm is favorably known all over America, and is always glad to show goods at any time to those fond of fine fur goods. A visit to their establishment cannot fail to be of pleasure to any one interested in the fur products of this continent.

ISLAND CITY VARNISHES.—This brand of coach and car varnishes is rapidly coming to the front—for durability and brilliancy it cannot be excelled. The manufacturers, Messrs. P. D. Dods & Co., have the very best machinery and appliances obtainable for grinding coach and car colors. To those who have used them we need say nothing, their general excellence having been proved to satisfaction, but to those who have not, we can confidently say, one thorough experience will demonstrate that they are all we claim them to be. Correspondence solicited, or where practicable, a personal call at our offices, 168 and 170 McGill Street, will, we feel confident, result in mutual benefit.

WENDELL & MACDUFFIE, of New York City, have an interesting exhibit of the Taunton Track Sprinkler and Snow Plows, built by the Taunton Locomotive Manufacturing Company.

The Nose Plow and the Double Track Share Plow can be seen at the Victoria Rink, and the Track Sprinkler on the tracks of the Montreal Street Railway, where it is in daily operation. The Taunton Locomotive Manufacturing Co., have always maintained their good reputation by the substantial construction of their street railway appliances, and a careful examination of their exhibit will readily show. Their long experience in the steam railroad business, has placed them in a position to build appliances warranted to give first-class service, both as to durability and economy of labor in operating. The question of street sprinkling is rapidly coming to the front as a means of satisfying the demands of the public, and increasing street railway earnings during the dusty summer months. The Nassau Electric Railway of Brooklyn, and the Bridgeport Traction Co., of Bridgeport, Conn., have bought this sprinkler, and have pronounced it a success. It will sprinkle about four miles of track at one filling, with a spread of twenty-one feet.

The Bonta Brake and Fender combined, is also installed on one of the cars on exhibition, and its efficacy as a suitable life-saving device seems to meet the demands of the most conservative railway men.

THE STANDARD PAINT COMPANY, of New York, Chicago and London, the well-known manufacturers of the P. & B. products that have been before the electrical fraternity for over ten years, exhibit their P. & B. compounds for insulating purposes, preservative paints for iron, roofs and woodwork, which are claimed to be absolutely water, acid and alkali proof, free from tar, and also that they will not dry out and chip or peel off. These materials are very penetrating, tenacious and elastic. They also show handsomely framed diplomas and data showing that they have received the highest competitive awards for their insulating papers and compounds at the Paris Exposition, World's Fair and the late Mid-winter Exposition at San Francisco. They also exhibit their well known P. & B. Armature and Field Coil Varnish and Insulating Tapes, Papers and the P. & B. Mo'or Cloth, largely used by street railways everywhere. The attractive literature and samples descriptive of the well-known P. & B. Ruberoid Roofing are displayed, as well as a model roof showing the application of the material. This roofing has as a basis the use of

wool and hair felt, thoroughly impregnated with the P. & B. water and acid proof composition. It is strong and durable and is claimed to be absolutely free from tar, odorless and easy to lay, and especially adapted for car barns, power houses, etc. It will not run at any heat and makes an exceedingly durable as well as an attractive roof. The manufacturers are willing to furnish a substantial guarantee with every roof. The exhibit consists of mounds, of cans and packages containing the goods above described.

PATTERSON & CORBIN.—The firm of Patterson & Corbin, of St. Catharines, Ont., ranks among the leaders of Canadian car manufacturers. They commenced to manufacture street cars in 1887, having manufactured the first electric cars in Canada, and have continued to do so since that time almost exclusively. In the busy season Messrs. Patterson & Corbin give employment to seventy hands, occupying three buildings, there being two erecting shops, the total superficial area of which is 270 x 58 feet, while the machine shop is 200 x 30, and the store room 45 x 18. At the present time they are building for the London street railway a new style of car, similar to those used in Cleveland and Detroit, and are shipping some cars for the Montreal Park and Island Railway. The capacity of their works at the present time is about three cars a week. They are of the latest and most approved design, the eighteen-foot vestibuled car being regarded as the standard.

ROBIN, SADLER & HAWORTH.—The large establishment of Robin, Sadler & Haworth, lately built for this business and being fitted with all modern appliances, for the manufacture of Belting, Laces, and everything in this line, is pronounced a model of its kind. The firm will take pleasure in seeing those interested; a large assortment of all goods ordinarily required kept constantly on hand and orders placed, are executed promptly and with the greatest of care. The long experience of this firm, with the fact that their facilities cannot be excelled, place them in a highly favorable position for executing any orders. Their factory and offices are at the corner of Seigneur and William streets Montreal.

THE LAURIE ENGINE CO. are drawing attention to their engines, which they have supplied to the Montreal, Toronto and Winnipeg street railways. The six Cross Compound condensing engines at work in the power house of the Montreal Street Railway were installed by them, and are certainly beautiful and powerful machines. The works and offices are at Nos. 1012 and 1014 St. Catherine Street, where visitors will be welcome.

ROBERT GARDNER & SONS of Montreal, have every facility for turning out machinery of a modern class; the lathe, of which they show a cut in their advertisement, which can be found in another portion of this book, has given great satisfaction, and is now in very general use. This firm bears a very high reputation throughout Canada. They are glad to show visitors over their extensive premises, known as the novelty Iron Works, 40 to 54 Nazareth Street, extending from Dalhousie to Brennan streets.

They manufacture machinery, steam engines mill work, bakers and confectioners machinery, reel ovens, turning lathes, shafting, hangers, pulleys, etc.

All orders entrusted receive personal supervision and can be depended on to be accurately and speedily executed.

MESSRS. J. H. FARR & CO., varnish manufacturers, 8 to 16 Morse Street, Toronto, have for the past three or four years been devoting their energies to the manufacture of insulating compounds of all kinds, and a specialty of Armature Insulating Compound, in which they have been most successful.

"They are now supplying all, or nearly all, the Canadian trade, as well as some of the largest manufacturers and street railways in the United States.

Their Armature Compound has been put to the most severe test as against all other compounds now manufactured, and has come out ahead.

They also manufacture Eureka Armature Paint, which is a good insulator and thoroughly waterproof.

Another of their leading lines is a very superior Weatherproof Wire Compound, in which a large trade is done, both in Canada and the United States.

Messrs. J. H. Farr & Co., started in the manufacture of varnishes a little over five years ago, and have established themselves as one of the leading firms in this line.

Their works are situated at Nos. 6 to 16 Morse street, Toronto, and are the most complete in the Dominion, covering a large area of ground, and being most modern in style.

Their firm is fully entitled to the position to which it has attained in the business world, in the face of the competition and duress of the times, to which every industry has been submitted.

They can claim for themselves a full share of the varnish trade throughout the Dominion, which they have earned by turning out first class goods, using nothing but the very best materials, and employing only the most skilled workmen.

They also manufacture a soft oil soap, which is made by a process of their own, from a pure linseed oil, and is used very largely, both in Canada and the United States. All the railroads and street cars in Canada use it for cleaning purposes. It is put up also for household purposes.

Messrs. J. H. Farr & Co. had a very nice exhibit of their Peerless Soft Oil Soap at the Toronto Exhibition this year.

They are dealers and importers in all kinds of bronze powders, metal leaf, dry colors, etc., and also manufacture roofing and paving pitch, tarred paper, etc., etc. By applying at the above address circulars, prices, and any other information, will gladly be given. See their advertisement on page 50.

BABCOCK & WILCOX CO.—Mr. Wm. T. Bonner, manager of the Babcock & Wilcox Co.'s business in Canada, exhibits a line of forgings such as they are now using in the construction of their new Wrought Steel Boilers. Some of these are marvels of the forger's art and cannot fail to interest anyone having to do with boiler work. The Babcock & Wilcox Company have recently equipped shops at Belleville, Ont., where all boilers for the Canadian trade are built, and the quality of work turned out is fully up to the standard of the New York and Glasgow shops. All boilers for street railway work are designed to carry 200 lbs. working pressure, and are constructed entirely of wrought steel.

Although the use of steam power for operating street cars is of comparatively recent origin, there are already upwards of 100 of the largest railways in the United States using over 150,000 H.P. of the Babcock & Wilcox boilers. No better proof of the success of this boiler could be desired than the fact that the aggregate sales now exceed 1,500,000 L.P. of which less than two per cent. have been thrown out from any and every cause. Over sixty per cent. of all orders now received are from former customers, which fact evidences the high esteem in which the company and its boilers are held.

C. W. HENDERSON, manufacturer of electric supplies and contractor for installing electric plants, etc. It is well worth while giving a considerable length of time to examine the exhibit of this manufacturer. He has lately installed a magnificent system of signal service for power stations in the power house of the Montreal Street Railway Co. This is something unique and deserves particular attention, as it is a very fine piece of electrical work.

The telephones manufactured by him, as also his switchboards, will bear comparison with the best in the market, the fact of having received a large order from the Canadian Telephone Co. of Sawyerville, Que., demonstrates this.

The installation of the plant in the head offices of the Bank of Montreal, is probably one of the finest in the country, and is well worthy of a visit. He has also installed very fine plants in the Thompson Shoe Co., the Standard Shirt Co., Montreal Steam Laundry, and other places. These plants, from our personal observations, and enquiries made, are certainly well put in and are a credit to his establishment, and illustrate the fact that the workmanship is excellent. Special attention is given to power house lines, car fittings, and the wiring of houses and stores for electric lights and bells. Mr. Henderson's office is at 44 Bleury Street, Montreal.

A SAFE INVESTMENT.—MESSRS. HANSON BROS. whose offices in the Temple building, on St. James Street, are probably the most extensive of any Canadian investment brokers, have floated more successful loans than any other Montreal firm. Their successes have caused the name to be considered as a guarantee to any business with which it may be connected, with the result that they are exemplifying the motto, that nothing succeeds like success. Messrs. Hanson make a specialty of placing investment monies.

In any transactions requiring the services of such a firm, good judgment will be used in communicating with them, and this may be done with the assurance that business entrusted to them will be promptly and carefully attended to.

MONTREAL BRASS WORKS.—Amongst the largest of our local factories, that of Robert Mitchell & Co. takes very high rank. They manufacture all classes of brass work, street car fittings, gas and electric light fixtures, in fact practically everything in this line. Their immense factory is situated in Ste. Cunegonde, a suburb of Montreal, but the office and show rooms are easy of access, being situated at 8 Bleury Street.

Mr. Richard R. Mitchell, of this firm, has lately patented a safety box for collection of fares. Already enquiries are rapidly materializing and some of our most enterprising Canadian lines will shortly be equipped with them.

The box, while perfect in its workings, is not expensive. Samples can be seen at their offices. This deserves looking into.

THE KRUPP WORKS, GERMANY.—MESSRS. J. W. PYKE & CO., who are Canadian agents for this well-known firm, are in a first-class position to quote prices on street rails and in fact street railway supplies generally. Krupp's goods are so well-known, that the name is a guarantee in itself. They are also agents for the Krupp Gas Engine, of which the following is a summary: Simplicity of construction, ease of working, repairs small, working parts accessible and easily cleaned; easily and quickly started; economy in working, also when running light and half load; very small gas consumption; automatic lubrication; number of revolutions small, small wear and tear; easy regulation of speed and almost noiseless motion.



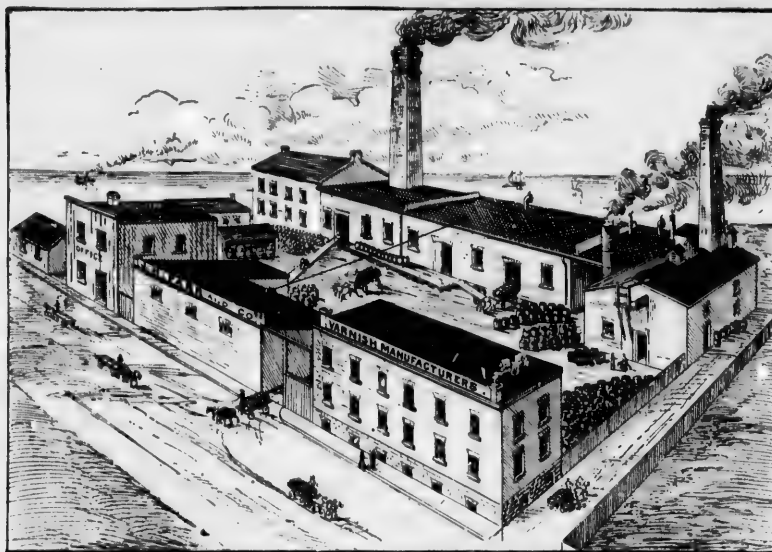
J. H. FARR & CO.

MANUFACTURERS OF

Fine Varnishes,



SHELLACS, JAPANS, ASPHALTUMS, PEERLESS SOFT OIL SOAP,
PAINTS, Etc., Etc.



ARMATURE INSULATING COMPOUND,

INSULATING COMPOUND FOR WEATHER-PROOF WIRE, EUREKA ARMATURE PAINT,
TUBE COMPOUND, MICA PASTE.

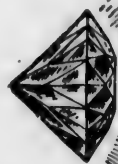


OFFICES AND WORKS:

6 to 16 Morse Street,

TORONTO, CANADA.





DIAMONDS

HENRY BIRKS & SONS, Gold and Silversmiths,

...The largest Diamond House in Canada.

St. Catherine Street and Phillips Square, MONTREAL.

Purchasers of Diamonds in this country have a great advantage over those in the United States, as in Canada unset stones are imported free, while the United States duty is twenty-five per cent.

SAVE THIS BY BUYING HERE.

Every facility for the inspection of jewels, and of goods in other departments, is always gladly afforded to visitors, whether they come with or without thought of purchase.

LARGE ASSORTMENT OF SOUVENIR SPOONS.....

To visit Montreal without seeing **Henry Birks & Sons'** would be like visiting Europe without seeing Paris. It is a leading feature of Canada.

It is unquestionably one of the most magnificent Jewellery Emporiums in the world.

**ARMATURE AND FIELD COIL VARNISH,
INSULATING COMPOUND,**

INSULATING TAPE,

MOTOR CLOTH,

PAINT FOR

PRESERVING

IRON OR

WOOD



**THE
P. & B.
PRODUCTS
ARE IN USE BY
STREET RAILWAYS AND
ELECTRICIANS GENERALLY,
BOTH IN THIS COUNTRY & ABROAD**

**THE STANDARD PAINT COMPANY,
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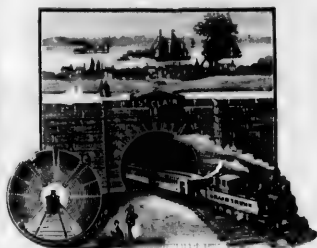
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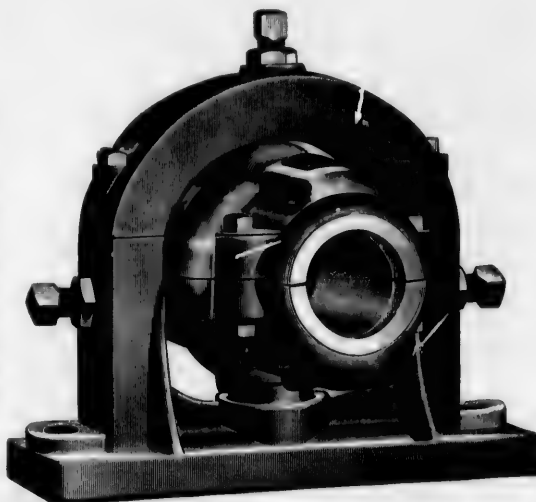
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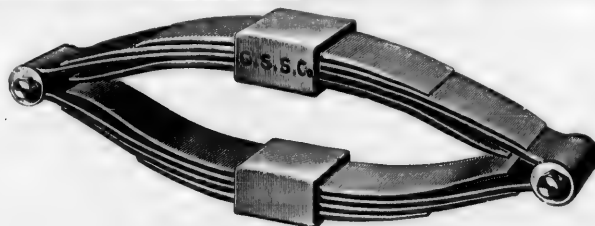
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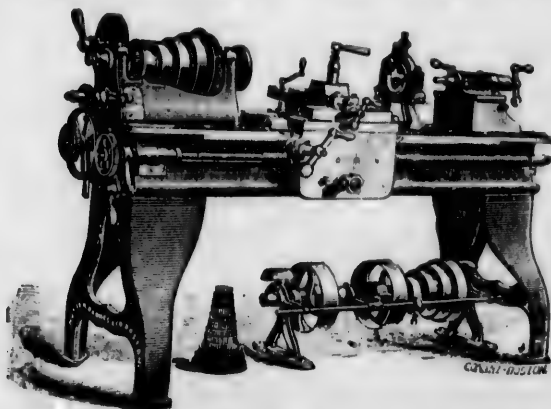
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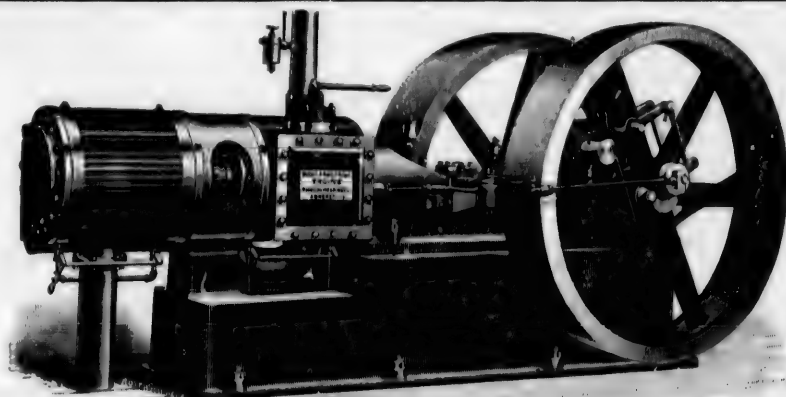
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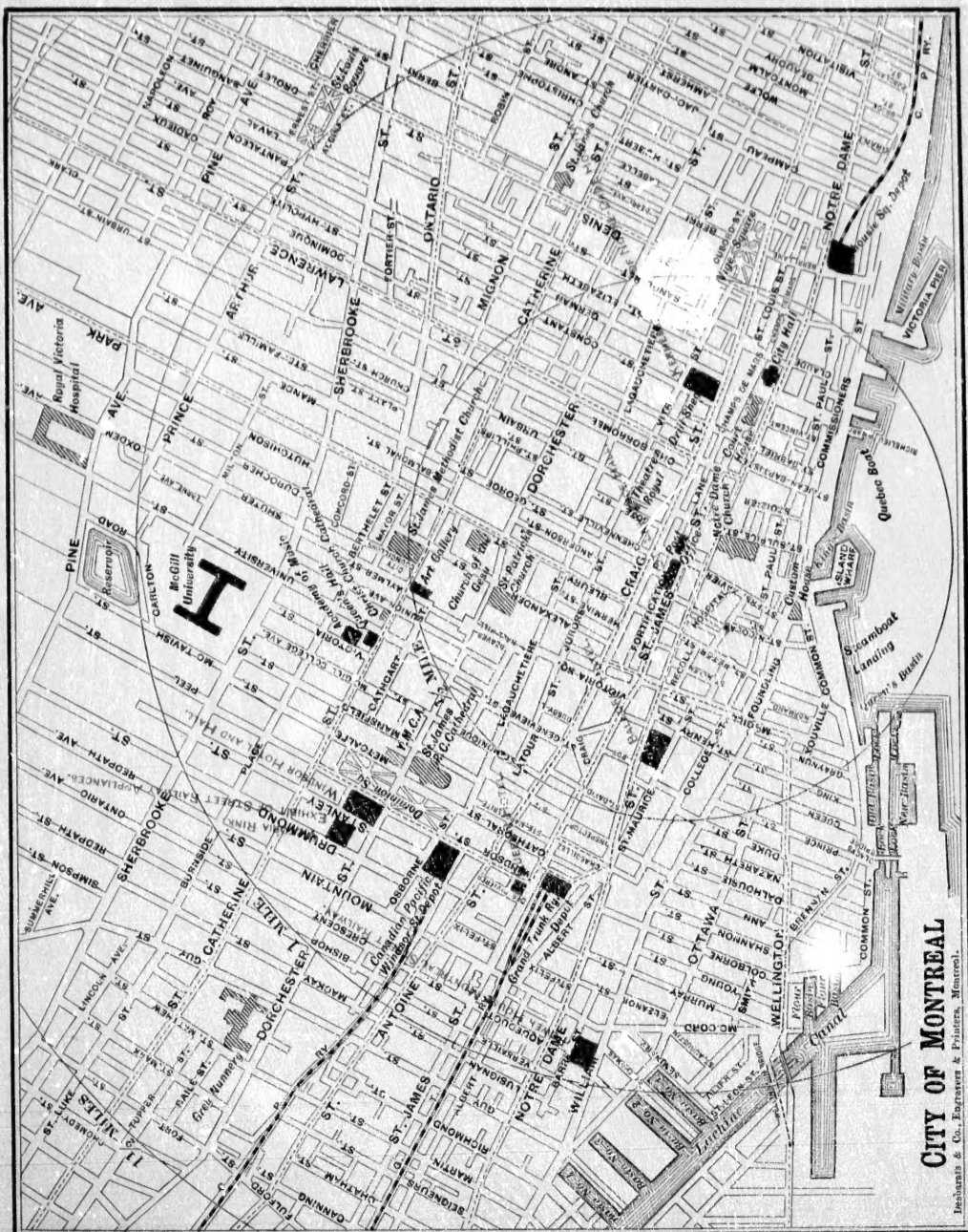
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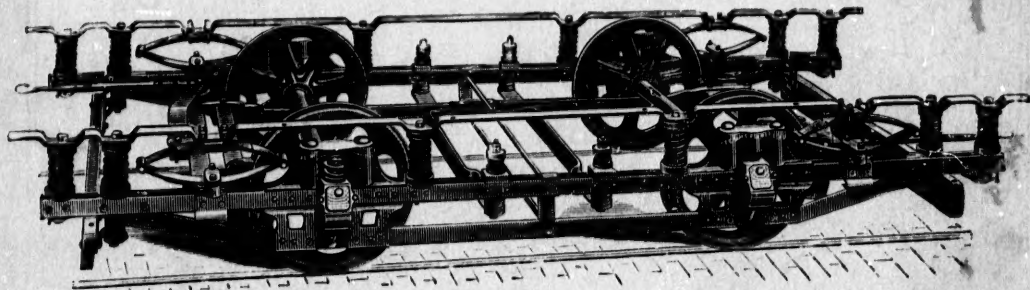
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